DOCUMENT RESUME

ED 100 100 EC 070 878

AUTHOR	Brown, Lou; And Others
TITLE	The Design and Implementation of an Empirically Based Instructional Program for Young Severely Handicapped Students: Toward the Rejection of the Exclusion Principle. Part 3.
INSTITUTION	Madison Public Schools, Wis. Dept. of Specialized Educational Services.
SPONS AGENCY	Bureau of Education for the Handicapped (DHEW/OE), Washington, D.C. Div. of Training Programs.; Wisconsin State Dept. of Public Instruction, Madison. Bureau for Handicapped Children.
PUB DATE	Aug 73
NOTE	399p.; For related yearly program reports see EC 070 876-879
EDRS PRICE	MF-$0.75 HC-$18.60 PLUS POSTAGE
DESCRIPTORS	Behavioral Objectives; Exceptional Child Education; Exceptional Child Research; *Language Instruction; *Mathematics; Public Schools; *Reading; *Severely Handicapped; Student Evaluation; *Teaching Methods

ABSTRACT

Reported are 15 classroom programs which were conducted (1972-73) with 14 students as part of a Madison, Wisconsin project to develop a public school instructional program for severely handicapped children. Ss are described as children who would usually be labelled custodial, autistic, or pretrainable and who would be excluded from involvement in most public school systems. The program stresses using highly structured applied behavioral analysis orientation. Included are four basic language skill programs used to teach direction following, location concept, receptive language, and expressive language. Four reading skill programs reported consist of initial sight word, color, basic alphabet, and chart story programs. Math skill programs are reported for three areas: number discrimination and labeling, basic counting and quantity concepts, and rudimentary math concepts. Adjunctive programs and papers include a prewriting program, a shape discrimination and labeling program, a paper on behavior management problems, and a description of the curriculum used with the only blind S. Appended are characteristics of individual Ss (taken from folders, teacher-observations, and parent interviews), class schedules and room arrangement charts, and forms used to evaluate students. (LS)

U.S. DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

BEST COPY AVAILABLE

ED 100 100

The Design and Implementation of an Empirically Based Instructional Program for Young Severely Handicapped Students: Toward the Rejection of the Exclusion Principle

Part III

Lou Brown
Nancy Scheuerman
Stephanie Cartwright
Robert York

August, 1973

Dr. Thomas Crowner
Administrator
Badger School

Dr. Bill Tilley
Director
Specialized Education Services
Madison Public Schools

EC 070 878

PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY
Madison Public Schools
TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE NATIONAL INSTITUTE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER

This Title VI Grant Report was developed by Madison Public Schools under Title VI-B, Education of the Handicapped Act, Project #30121, entitled A PUBLIC SCHOOL PRE-TRAINABLE PROGRAM, under Grant Award #594149-73, U.S. Office of Education.

TABLE OF CONTENTS

Page

Acknowledgements i

Overview 1

Section A Basic Language Skills

I. Direction Following Program 6
II. Location Concept Program 28
III. Receptive Language Program 43
IV. Expressive Language Program 67

Section B Reading Skills

I. Initial Sight Word Reading Program 80
II. Color Program 94
III. Basic Alphabet Skill Program 110
IV. Chart Story Program 121

Section C Math Skills

I. Number Discrimination and Labeling Program 131
II. Basic Counting and Quantity Concept Program 156
III. Rudimentary Math Concepts Program 167

Section D Adjunctive Programs and Papers

I. Pre-writing Program 199
II. Shape Discrimination and Labeling Program 212
III. Behavior Management Problems 228
IV. To Those Who Are Looking For Student 7 233

Appendices

A. Student Information 244
B. Class Schedules and Room Arrangements 273
C. Parent-Teacher Evaluation Booklets 284

References 340

BEST COPY AVAILABLE

Acknowledgements

Under the auspices of Dr. Thomas Crowner and Dr. Bill Tilley, the Department of Specialized Educational Services of the Madison Public Schools System has assumed the responsibility of producing a series of annual publications related to public school instructional programs for severely handicapped students. These position papers and reports of instructional programs have become known, at least locally, as the "Badger Books" as most of the material contained in these reports has been generated from efforts of the staff of Badger School, a Madison Public School System facility for severely handicapped students. Part III of the series is concerned with communicating the activities of only two classrooms at Badger School during the 1972-73 academic year.

During the summer of 1972, the Madison Public School System was awarded an ESEA Title VIB grant by the Wisconsin Department of Public Instruction, Bureau for Handicapped Children. The specific charge of this grant was for the Madison Public School System to develop and report a public school program for students who, until recently, would have been excluded from public school programs because of various social, sensory-motor and intellectual deficits.

In the past, many of the children involved in this project might have been called autistic, pretrainable, severely retarded, dependent, custodial, multiply handicapped, etc. and because of attendant problems presented to school personnel would have been denied access to public school services. Due to many pending as well as decided judicial actions, public school administrators in many parts of the country no longer have the legal right to exclude any child from public school services. The State of Wisconsin, in anticipation of such legal actions locally as well as in anticipation of the passage of legislation that will encourage the provision of educational services to all school age children, provided financial support for this project. The writers would like

to take this opportunity to formally acknowledge the support of Mr. John Melcher and his staff for A) establishing educational provisions for severely handicapped students as a high priority and B) for allowing the Badger staff the opportunity and support to participate in the development of educational services for these students.

In addition to the taxpayers of the city of Madison and the State of Wisconsin the writing of this report was also supported by a special project training grant from the U.S. Office of Education, Bureau for Handicapped Children, Division of Training Programs.

The writers would like to express their sincere appreciation to the following practice teachers, methods students and instructional aides who did so much to make this report possible:

1) Gretchen Grunau
2) Ernestine Mearlon
3) Shirley Krisnich
4) Wendy Backes
5) Shari Hart
6) Peggy Ziewacz
7) Cathy Hunt
8) Larry Douglass
9) Barbara Blassick

Finally, the writers would like to acknowledge the support, tolerance and guidance of Dr. Tom Crowner whose leadership and administrative ability contributed immeasurably to the implementation of the project.

Those persons interested in obtaining this book and information related to programs for severely handicapped students in the Madison Public School System should write to:

Dr. Bill Tilley, Director
Dept. of Specialized Educational Services
Madison Public School System
545 West Dayton Street
Madison, Wisconsin 53706

More specifically one should request the following:

A) Brown, L., Bellamy, T., and Sontag, E. The development and implementation of a public school prevocational training program for trainable level retarded and severely emotionally disturbed students. Part I. Madison Public School System, Madison, Wisconsin, 1971.

B) Brown, L. and Sontag, E. Toward the development and implementation of an empirically based public school program for trainable mentally retarded and severely emotionally disturbed students. Part II. Madison Public School System, Madison, Wisconsin, 1972.

C) Brown, L., Scheuerman, N., Cartwright, S., and York, R. The design and implementation of an empirically based instructional program for young severely handicapped students: Toward the rejection of the exclusion principle. Part III. Madison Public School System, Madison, Wisconsin, 1973.

Lou Brown, Technical Assistant
Nancy Scheuerman, Teacher, Class A
Stephanie Cartwright, Teacher, Class B
Robert York, Technical Assistant

Overview

This report is an attempt to communicate to the readers and others concerned with providing educational services to young severely handicapped students the activities conducted in two classrooms during the 1972-73 academic year at Badger School.

Prior to the formal presentation of the classroom programs perhaps it would be appropriate to elucidate several basic structural considerations. First, a total of fourteen students ranging in age from 5-10 were enrolled in the two classrooms. The fourteen students were divided into two seven member classes. Classroom A contained the seven students who manifested the lowest general functioning level as well as the most severe behavioral management problems. Prior to the start of the project (August, 1972) the fourteen students had received standardized evaluations from various psychologists. According to the psychological reports available to the teachers, the performance of the students in the evaluation setting ranged from "untestable" to estimates of IQ scores in the 30-40 range. Almost all the students in the past would have been diagnosed as custodial, autistic, pretrainable, etc. and excluded from involvement in most public school systems. For a more detailed presentation of information concerning other characteristics of the students the reader is referred to Appendix A.

Second, the classrooms were staffed in a manner that is somewhat different than most public school classrooms in that the Madison Public School System is intimately and cooperatively involved in programs concerned with training teachers of severely handicapped students at the University of Wisconsin. Nancy Scheuerman and Stephanie Cartwright were the two teachers responsible for the programs and activities of the two classrooms. Barbara Blassick and Larry Douglass were the two full-time aides assigned to the classrooms. Robert York, a graduate student at the University of Wisconsin, functioned in the classrooms as a teacher-aide, technical-advisor and general resource person every morning from August through May. Two University of Wisconsin practice teachers worked in the rooms during the morning sessions from August through December, 1972, and two different practice teachers worked during the morning sessions from January through May, 1973. Finally, five University of Wisconsin students taking a "methods" course from Dr. Lou Brown were assigned to the classrooms. Three of the "methods" students worked during the afternoon sessions from August through December, 1972, and the other two worked during the afternoon sessions from January through May, 1973. During most of the instructional programs the classes were divided into two major groups. The third person in the room was usually involved in one to one tasks with students who required an unusual amount of instructional time. It should be noted and emphasized that all persons in the room were considered instructional personnel in that all had direct teaching responsibilities.

Third, the classrooms were conducted from a highly structured applied behavioral analysis orientation. That is, the teachers decided What to teach the students and the What was then converted into measurable behavioral objectives. The teachers then decided How to teach the students. The How was then converted to specific behaviors on the part of the teachers (instructional technology). The teacher then decided what instructional materials were required by the instructional programs. In almost all situations materials were created or adapted for use by the instructional staff. Finally, the teachers decided that direct measures of the effectiveness of their programs would be obtained. Thus, efforts were made to obtain response by response measures of each students' performance in each program during the entire school year. Schedules of the activities of both classes and a chema of the manner in which the rooms were designed are presented in Appendix B. Included in Appendix B are the class schedules as they existed in August, 1972, and as they existed in May of 1973.

The two schedules are presented to communicate to the reader that as behavioral management problems are resolved and different programs are rejected or completed, more complex programs can be implemented.

Fourth, time and space do not permit the reporting of the performance of all students in all of the programs that were implemented. Thus, the writers were forced to selectively report programs that seemed to have the most general relevance to teachers and administrators confronting similar children in other school systems. The writers would like to emphasize in as intense a manner as possible that the programs reported here be considered by the reader as standards from which a teacher might depart, rather than recipes that mitigate against the manifestation of instructional ingenuity. Indeed, few if any of the programs as they were designed in August, 1972, survived the test of empirical verification with all of the students. Some programs were effective with all students, some were rejected in total, but most were modified in an attempt to accommodate the acquisition and performance of each student. For a detailed presentation of how a student's performance was recorded and reported to parents and other teachers, the reader is referred to the parent teacher evaluation booklets depicted in Appendix C.

BEST COPY AVAILABLE

The final structural consideration relates to the organization of the report. If a program was implemented in both rooms, one description will be provided. However, in general, the students in Classroom B completed more programs than those in Classroom A. In addition, the students in Classroom B progressed through more components of a particular program. Thus, as a communication aid, a task analysis of a particular program will be presented and the progress of each class will be reported selectively.

Some hopes and some rationalizations

The school year ended at Badger on June 5, 1973. The major portion of the material in this book was prepared (including the graphs) during the final two weeks of May and the month of June 1973. Functioning under such time pressure makes it difficult to include all the information that should be included in as precise and lucid a fashion as is warranted. Thus, it was necessary that programs, ideas, opinions, and idiosyncratic experiences be given selective consideration. We have attempted to provide the reader with a flavor of what happened in two classes at Badger School this past year in as open and honest a manner as we know how. Obviously, much of what happened is not presented in the pages that follow. With this in mind we would like to present a cursory review of other issues, problems, and ideas that might be of interest.

First, from reading this report one might extract the impression that the classes were cold, sterile, laborious. Nothing could be more erroneous. We have been charged with delineating and communicating What and How we instructed our students in the hope that others might find our experiences helpful. Thus, we have chosen to be as precise in our writing as we were able under the circumstances and deemphasize the emotional aspects of our experience. There is no doubt that the classrooms were highly structured and that stringent production demands were placed upon the students, parents and staff. On the other hand, there is no doubt that the interactions were warm, humorous, satisfying and loving.

Second, the Badger staff is attempting to develop a longitudinal public school program whereby once severely handicapped students can enter at age X and leave at age Y with the knowledge and skills necessary to survive as productive, self-sufficient citizens in complex community settings. Our objective is not easy and by no means is it realizable at this time. However, when we consider the ever-present alternative, placement in a large multi-failure residential institution, the relevance and importance of our responsibilities must be confronted.

Third, the more we become involved with young severely handicapped students the more we realize that we will have to enlist and maintain the support and assistance of parents. The time, staff and expertise necessary to maximize the development of the student is simply not available to public school programs. We hope that in the future we will be able to report on our activities concerning the training and involvement of parents in our program.

Finally, it must be communicated that the programs reported in this book are not "research" programs. We were concerned with delivering the best possible instructional service to the students in the classrooms. In order to determine whether or not the activities we engaged in resulted in the students manifesting skills that were not in their behavioral repertoires before we became involved with them, we decided that we would obtain as many direct measures as was practical. However, the caution, neutrality, precision and controls required by single subject and subjects as their own controls designs, for better or worse, were minimally acknowledged. For example, reversal designs were not used; simultaneous inter-observer reliability measures were not obtained; when multiple baseline designs were arranged, continuous measures of responses to all tasks were not gathered; in many situations only post-teaching measures were taken; and rarely were we concerned with delineating the effect of a specific independent variable (e.g., quantity of reinforcement, number of modeling cues) on a dependent variable.

Thus, those interested in generalizing the information contained in this book to other students in other settings should be extremely cautious.

On the other hand, we have tried to communicate, as precisely as was practical, exactly what we tried to do and how we tried to do it.

L.B.
N.S.
S.C.
R.Y.

Direction Following Program

Someone recording a teacher's verbalizations during the course of a school day would no doubt be exposed to some form of the following teacher behaviors: "Johnny, get your coat, "Susie, go to your desk" or "Jim, get a pencil and some paper". In almost all classrooms a teacher spends much of her time verbally directing students to perform some task. Certainly many children arrive at school having acquired the skills necessary to follow verbal directions. However, when dealing with severely handicapped students a teacher cannot assume that such students have the direction following skills required for a smoothly functioning interpersonal environment.

A teacher confronted with a classroom of students who do not follow verbal directions is faced with a critical instructional dilemma to which she must attend. As stated by Brown, et al (1971), there are several options she may choose to exercise. She may perform the tasks implicit in the directions issued; she may model the behaviors of concern and hope that the students will perform likewise, or she may prime the students through the requested movements. It is obvious that these three options require a considerable amount of time and energy, and still might not result in the students acquiring the necessary direction following skills. In our view, to establish an efficiently operating classroom it is mandatory that students are taught to follow verbal directions.

The major purpose of this instructional program was to teach basic direction following skills to young severely handicapped students. There are three phases to the instructional program. Phase I was concerned with teaching the students to follow one-component local directions; Phase II was concerned with teaching the students to follow one-component distant directions; and Phase III was concerned with teaching the students to follow two-component local serial directions. It should be noted that several ancillary objectives were established:

(a) to foster the development of attending skills, (b) to teach appropriate behaviors required in a group instructional setting, and (c) to develop auditory memory skills in the form of performing precise behavioral sequences in response to auditory cues.

There were specific criteria for choosing the directions to be taught. In Phase I, the one-component directions involved simple body movements and were selected because the students seemed to possess the prerequisite skills related to the location of many body parts. Phase II involved one-component directions which required the students to get to specific locations in the room. Locations most frequently referred to during the school day were selected. For example, students were sent to the door, to the coatroom and to the wastebasket. As Phase III was concerned with the more complex task of performing behavioral sequencing, the behaviors selected were those that the students had performed successfully in Phase I.

Finally, it should be emphasized that the fundamental assumption upon which this program was based was that if verbal control could be developed in highly structured instructional settings such controls could be ultimately transferred to less structured and/or more natural environmental settings.

BEST COPY AVAILABLE

Students, Teaching Arrangements and Materials

Students (Ss). Twelve Ss (Classes A and B) were involved. Ss 7 and 10 were not involved. Ss initially progressed through the program in groups, but as interstudent performance began to vary greatly, the program was individualized.

Teaching Arrangement. Teaching was conducted in a group arrangement with Ss seated in a semi-circle directly in front of a teacher. (See Appendix - Classroom designs). There were two teachers (Ts) to 6 Ss in the initial phases of the program. As some Ss completed the program, this arrangement was altered to one T to

4 *Ss* and the remaining *Ss* were involved in more complex instructional activities.

Materials. Materials were not needed for Phase I and Phase III, as the directions involved the movement of body parts. Phase II involved using areas which are common to most primary classrooms, e.g., blackboards, sink, coatroom, and plastic containers used to secure *S*'s instructional materials (scissors, pencil, crayons): (these containers were located on shelves on one side of the classroom.)

Data sheets were constructed to record the responses of each *S* to each verbal direction in each Phase of the program.

Task Analysis

Phase I - *Teaching students to respond to one-component local verbal directions*.

The behavioral objectives of concern in Phase I may be described as follows:

In response to a verbal direction by *T*, *Ss* will perform the appropriate body movements to execute the command.

The following set of directions were presented, and appropriate responses required in Phase I.

Set I

	Teacher Cue		Student Response
C_1:	"Raise hands"	R_1:	Raises hands above head, not touching head.
C_2:	"Clap hands"	R_2:	Brings palms together producing "clap" sound.
C_3:	"Stand up"	R_3:	Brings body to vertical position with feet on floor.
C_4:	"Stamp feet"	R_4:	Brings bottoms of feet in contact with floor and taps them on floor.
C_5:	"Shake head"	R_5:	Moves head from side to side.

Phase II - Teaching students to respond to a one-component distant direction.

The behavioral objectives of concern in Phase II may be described as follows:

In response to a verbal direction by T, S will stand up, walk to a specified location in the room and indicate location by physically touching or pointing to the object or physical area.

The following sets of directions were used in Classes A and B (directions differ because of classroom arrangements).

Class A

Set 11A

Teacher Cue	Student Response
C_1: "Go to door"	R_{1-5}: S stands up and walks from instructional area to appropriate location and touches or points to appropriate object or area.
C_2: "Go to wastebasket"	
C_3: "Go to sink"	
C_4: "Go to coatroom"	
C_5: "Go to boxes"	

Class B

Set 11B

Teacher Cue	Student Response
C_1: "Go to door"	R_{1-5}: Same as described in Set 11A.
C_2: "Go to wastebasket"	
C_3: "Go to sink"	
C_4: "Go to blackboard"	
C_5: "Go to boxes"	

Phase III - Teaching students to respond to a two-component local serial direction.

The behavioral objectives of concern in Phase III may be described as follows:

In response to a verbal direction by T, S will perform the appropriate body movements in the sequence in which they were presented.

The following sets of directions were used in Phase III.

Set III

	Teacher Cue		Student Response
C_1:	"Clap hands, then stand up"	R_1:	S brings palms together producing "clap" sound, then brings body to vertical position with feet on floor.
C_2:	"Stamp feet, then shake head"	R_2:	S brings feet in contact with floor and taps feet on floor, then moves head from side to side.
C_3:	"Stand up, then raise hands"	R_3:	S brings body to vertical position with feet on floor then raises hands above head, not touching head.
C_4:	"Shake head, then clap hands"	R_4:	S moves head from side to side, then brings palms together to produce "clap" sound.
C_5:	"Raise hands, then stamp feet"	R_5:	S raises hands above head, not touching head, then brings bottoms of feet in contact with floor and taps feet on floor.

Set IV

	Teacher Cue		Student Response
C_1:	"Clap hands, then raise hands"	R_1:	S brings palms together producing "clap" sound, then raises hands above head, not touching head.
C_2:	"Raise hands, then shake head"	R_2:	S raises hands above head, not touching head, then moves head from side to side.
C_3:	"Stand up, then stamp feet"	R_3:	S brings body to vertical position with feet on floor, then taps bottoms of feet on floor.
C_4:	"Stamp feet, then clap hands"	R_4:	S brings bottoms of feet in contact with floor and taps them on floor, then brings palms together producing "clap" sound.
C_5:	"Shake head, then stand up"	R_5:	S moves head from side to side, then brings body to vertical position with feet on floor.

BEST COPY AVAILABLE

Teaching Procedures

Phase I - Teaching students to respond to one-component local directions.

Prior to the teaching of Phase I, baseline conditions were instituted to determine Ss initial ability to follow the verbal directions of concern. Baseline procedures were as follows:

(1) T would face S_1 and present the first direction, "S_1, stand up". Regardless of S_1's response T would say "Thank you". Then T would record a "+" on the data sheet for a correct response (S_1 stood up) or a "-" for an incorrect response (shook head) or failure to respond. T would then present a different direction to S_2, etc.

(2) T used the above procedure until all Ss had an opportunity to respond to all five directions on three separate occasions.

After baseline data was taken on Set 1 of Phase I, T instituted the following teaching procedure.

(1) T would face one of the Ss and verbally give S_1 the first direction, "S_1, stand up". If S_1 stood up, T smiled, said "Good", "Fantastic", provided a consequence (piece of cereal, or drink of water from a squeeze bottle), recorded a correct response on the data sheet, and presented a different direction to S_2, etc.

(2) If S_1 responded to the direction incorrectly (i.e., jumped from chair) or failed to respond to the direction, T said "No", repeated the verbal cue, "stand up" and demonstrated the correct response by standing up. Then T repeated the cue, "S, stand up". If S_1 imitated T's demonstration and stood up, T smiled, said "Good", recorded an "M" on the data sheet and presented a different direction to S_2, etc.

(3) If S_1 did not imitate T's demonstration, T said "No", repeated the verbal cue, "S_1, stand up" and primed the response by physically

guiding S to a standing position. When S_1 completed the response with T's priming, T smiled, said "Good" and recorded a "P" on the data sheet and presented a different verbal direction to S_2. On each subsequent trial, T decreased the amount of physical prompting of S_1 until S_1 responded to the imitative cues provided by T. Subsequently, imitative cues were gradually removed (faded).

(4) The procedures described in 1, 2, and 3 above were followed until each S responded correctly to each of the five one-component local directions on 3 consecutive trials. It should be noted that the 5 directions were issued randomly with the restriction that T did not present a given direction twice in succession.

In one instance a modification of one of the directions seemed necessary to induce correct responding. The direction, "Raise hands", apparently became auditorily confused with the direction, "Clap hands". Thus, "Raise arms" was substituted for "Raise hands" until S met criterion (3 correct consecutive trials). Then the original direction "Raise hands" was reinstated and S maintained correct responding.

Phase II - Teaching students to respond to one-component distant directions.

Baseline procedures as described in Phase I were used to determine Ss ability to follow the verbal directions contained in Phase II. After three baseline trials, T began teaching Set II (A or B) using the following procedures:

In Phase II imitative cues were provided by T, student teachers (ST), aides or one of the students who had reached criterion on this phase. The ST will be used as the model in the description that follows.

(1) T would face S_1 and say, "S_1, go to door". If S_1 stood up, walked to the door, indicated proximity (touching or pointing to door), T smiled, said "Great; fantastic", provided a consumable consequence, recorded a

BEST COPY AVAILABLE

correct response and presented a different direction to S_2, etc.

(2) If S_1 failed to respond to the direction or incorrectly responded (i.e., S_1 went to the sink), T said "No, watch (ST)", repeated the verbal direction "ST, go to door" and the ST modeled the correct response by walking to the door and touching it. T then said "S_1, go to door". If S_1 imitated ST's demonstration and walked to the door and touched it, T smiled, said "Good", recorded an "M" and presented a different direction to S_2, etc.

(3) If S_1 did not imitate the ST's demonstration, T said "No", repeated the direction "Go to door" and ST primed the response by physically guiding S_1 from his chair to the door. When S_1 completed the response with ST's priming, T smiled, said "Good", recorded a "P" on the data sheet and presented a different direction to S_2, etc. Physical prompting was reduced (faded) on successive trials until S_1 responded as an imitation to ST. Subsequently, the imitative cues provided by ST were also faded.

(4) As in Phase I, procedures described in 1, 2, and 3 were followed until each S responded correctly to each of the five one-component distant directions on 3 consecutive trials. The five directions were presented randomly with the restriction that no one direction was presented twice in succession.

Phase III - Teaching students to respond to two-component local serial directions.

Baseline procedures as described previously were used to determine Ss' ability to respond to the verbal directions of Phase III. After three baseline trials on Sets III and IV, T began teaching Set III using the following procedures.

(1) T would face S and say, "S , clap hands, then stand up". If S_1

responded correctly by clapping hands, and then standing up, T smiled, said "Fantastic, etc.", provided a consumable consequence, recorded a correct response and presented a different direction to $\underline{S}_2$, etc.

(2) If $\underline{S}_1$ failed to respond to the verbal direction or responded incorrectly (i.e., responded to the components in a reversed order or performed only one of the components), T said "No", repeated the verbal cue, "Clap hands, then stand up" and demonstrated the correct response. T repeated the cue "$\underline{S}_1$, clap hands, then stand up". If $\underline{S}_1$ imitated T's demonstration (clapped hands, then stood up), T smiled, said "Good", recorded an "M" on the data sheet and presented a different direction to $\underline{S}_2$, etc.

(3) If $\underline{S}_1$ did not imitate T's demonstration, T said "No", repeated the direction, "$\underline{S}_1$, clap hands, then stand up" and primed the correct response by physically guiding $\underline{S}_1$'s hands together to clapping position then physically guiding $\underline{S}_1$ to a standing position. When $\underline{S}_1$ completed the response with T's priming, T smiled, said "Good", recorded a "P" on the data sheet and presented a different direction to $\underline{S}_2$, etc. On subsequent trials, T decreased the amount of physical prompting of $\underline{S}_1$ until $\underline{S}_1$ responded as an imitation of T. It should also be noted that on occasion an S would respond correctly to the first component of the direction, but needed priming on the second component. In this situation T would allow S to respond to the first component and then physically prompt the second component. Prompting was decreased on the second component on successive trials until S responded as an imitation of T. Subsequently, imitative cues were faded.

(4) Procedures described in 1, 2, and 3 above, were followed until each S responded correctly to each of the five two-component local serial

directions on 3 consecutive trials. Again note, that directions were presented randomly with the restriction that no direction was presented twice in succession.

(5) After each *S* reached criterion on the five directions in Set III, *T* reinstated Phase III baseline procedures. Baseline data was obtained for three trials on Set III and Set IV.

(6) *T* taught Set IV using the procedures described in 1, 2, 3, and 4 above until criterion was reached by each *S*.

(7) *T* again used baseline procedures and recorded performance on three trials each of Set III and Set IV. This baseline was used to determine retention of the direction following skills previously acquired.

In Phase III, *T* realized that although *Ss* had performed correctly to each of the individual components of the directions in Phase I, individual *Ss* were having difficulty in responding correctly to these same directions when presented in a two-component chain. Therefore, modifications were developed to help *Ss* who were failing to progress. One modification employed was a time lag in the presentation of the two components of the direction. For example, the direction "Stand up, then raise hands" was presented by *T* using the following procedures:

(1) *T* would say "S_1, stand up". If S_1 stood up, *T* smiled, said "Good", then *T* would say "then raise hands". If S_1 raised his hands, *T* would smile, say "Good" and record a +D on the data sheet for time delay.

(2) On subsequent trials *T* would say "Stand up" (wait 1-5 sec.) (and then say), "Then raise hands". If S_1 responded correctly to each component, *T* would smile, say "Good" and record a +D for time delay.

(3) On successive trials, *T* would continue to reduce the time delay between the two-component directions until each direction was given in its original form.

BEST COPY AVAILABLE

During this [illegible] procedure, the same teaching procedures as described originally in Phase III were used. That is, modeling, priming and consequating procedures were conducted in the same manner.

RESULTS

The criterion performance of all 12 Ss is summarized in Table I. From Table I it can be discerned that five Ss performed at criterion on only Set I and Set IIA or IIB, three Ss reached criterion performance on Sets I, IIA or IIB and III; and four Ss reached criterion performance on Sets I, IIA or IIB, III and IV.

The direction following program was conducted using the largest teacher-student ratio of any program reported in this volume. Thus, it seems appropriate that group performance be presented.

Figures 1A, 1B and 1C represent the performances of the six Ss in Classroom A. It can be discerned from figure 1A that the six Ss responded correctly to 34 out of a possible 90 one-component local verbal directions during the baseline period (trials 1-3). Instruction was initiated at trial 4, and a total of 29 teaching trials were required before the six Ss emitted 90 consecutive correct responses.

After the six Ss reached criterion on the directions of Set I, they were baselined on Set IIA (one-component distant directions). Thus, it seems reasonable to expect that although one-component distant directions would be more difficult and the Ss would not do as well on baseline measures as they had done initially on one-component local directions, skills acquired from the teaching of local directions would generalize to distant directions. Such seems to have been the case in that during the baseline period of Set IIA Ss responded correctly to 40 of 90 one-component distant directions which is more than the total number recorded during the Set I baseline period. At trial 4 instruction was initiated and a total of 27 teaching trials were required before Ss emitted 90 consecutive correct responses.

After Ss had reached criterion on Set IIA, baseline measures of the two component local serial directions of Sets III and IV were obtained. As can be discerned from Figure I C (trials 1-3) Ss emitted 17 of a possible 90 correct responses to the two component local serial directions of Set III and 12 of a possible 90 correct responses to the two component local serial directions of Set IV.

At the end of the school year, 71 teaching trials were completed on Set III and the six Ss as a group had not reached criterion. However, it should be noted that four of the six Ss did complete Set III and moved on to instruction on Set IV. The two Ss who had not completed Set III at the end of the school year, responded correctly to four of the five directions of Set III on the last two teaching trials.

In an attempt to communicate an individual performance pattern, the performance of S_3 will be presented graphically. It can be discerned from Figure 2 A that S_3 emitted 5 of a possible 15 correct responses to the one-component local directions of Set I during the baseline period (trials 1-3) and only 10 teaching trials were required before criterion was reached.

The performance of S_3 improved dramatically when Set II directions were presented (Fig. 2 B). That is during the baseline period S_3 responded to 12 of 15 one-component distant directions correctly, and performed at criterion level with little, if any, teaching (trials 4-6).

Figure 2 C represents the performance of S_3 on Sets III and IV. Baseline measures of Sets III and IV were taken after criterion had been reached on Set II. It can be discerned that S_3 responded correctly to 4 of the 15 two-component

local serial directions of Set III and 2 of the 15 directions of Set IV. Subsequently, 26 teaching trials were required for $\underline{S}_3$ to reach criterion on Set III. In a rebaseline period (trials 30-32) $\underline{S}_3$ made 14 of 15 correct responses to Set III and a remarkable 9 of 15 correct responses to the directions of Set IV. In other words, the performance of $\underline{S}_3$ on Set IV improved dramatically, without direct instruction.

Subsequently, only 4 teaching trials were required for $\underline{S}_3$ to reach criterion on Set IV and in the final rebaseline period (trials 37-39) criterion responding was maintained in response to both Sets III and IV.

DISCUSSION:

Teaching the students to respond to circumscribed verbal directions utilized in this program, while important, cannot be considered a tenable instructional objective. That is, although all twelve students were taught to follow at least one component local and distant directions, the program can only be justified if the skills acquired in the program generalized to other persons and other settings.

At this point, direct measures of whether the skills generalized are not available. However, anecdotal support for generalization has been reported by the teachers and many of the parents. According to the teachers the students seemed quite responsive to directions concerned with lining up at the classroom door, going to the toilet and following directions required of various non-instructional and instructional activities. In fact, the teacher of Class A reports that when she issues the three-component direction, "Get a paper towel, wet it and clean your face", four of the six students in her room are able to complete the required behaviors in the sequence in which they were issued. In addition, during parent-teacher conferences, many parents offered information that they were surprised and pleased in that their children were more responsive to their verbal cues and thus more helpful around the house.

Finally, several programmatic concerns should be noted. First, as generalization across persons and objects and settings was the crucial objective, direct measures of such skills should have been obtained. However, when the program was initiated the behavior or absence of behaviors on the part of the students made assessment of generalization seemingly quite remote. Needless to say, more acceptable indications of generalization will be recorded in the future.

BEST COPY AVAILABLE

Secondly, although all students accrued various increments of success, the program as it was designed may not have been appropriate for every student. For example, for many students the jump from one-component distant to two-component serial directions presented much difficulty. In an attempt to reduce the difficulty of the task, options are being considered. The first relates to conducting a more precise task analysis so that progression through the steps are easier for the students. The second relates to the choice of directions in that the same movements were involved in the one-component local and two-component local serial directions. This similarity of movements which the writers held would be helpful for the students may have impeded the program some. That is, during the teaching of one-component local directions, a student would be praised for clapping his hands and during the instruction of two-component directions, the student would not be reinforced for this same behavior. One obvious instructional option would be to require different movements in different sets of directions.

VERBAL DIRECTION FOLLOWING PROGRAM

DATA SHEET

SET I

BEST COPY AVAILABLE

Date: ________________

Trial: ________________

STUDENT NAME	STAND UP	RAISE HANDS	STAMP FEET	CLAP HANDS	SHAKE HEAD	

total no. correct

This is a sample data sheet which was used for the verbal direction following program. For Sets II, III and IV, this data sheet was adapted across sets by changing teacher cues appropriate for the set being taught.

TABLE 1

Sets of Verbal Directions

Students	I	IIA or IIB	III	IV
S_1	X	X		
S_5	X	X		
S_8	X	X		
S_{12}	X	X		
S_{14}	X	X		
S_2	X	X	X	
S_6	X	X	X	
S_{13}	X	X	X	
S_3	X	X	X	X
S_4	X	X	X	X
S_9	X	X	X	X
S_{11}	X	X	X	X

X = performance criterion reached

igure 1A

Verbal Direction Following - One-Component Local

(Ss #1, #2, #3, #4, #5 & #6)

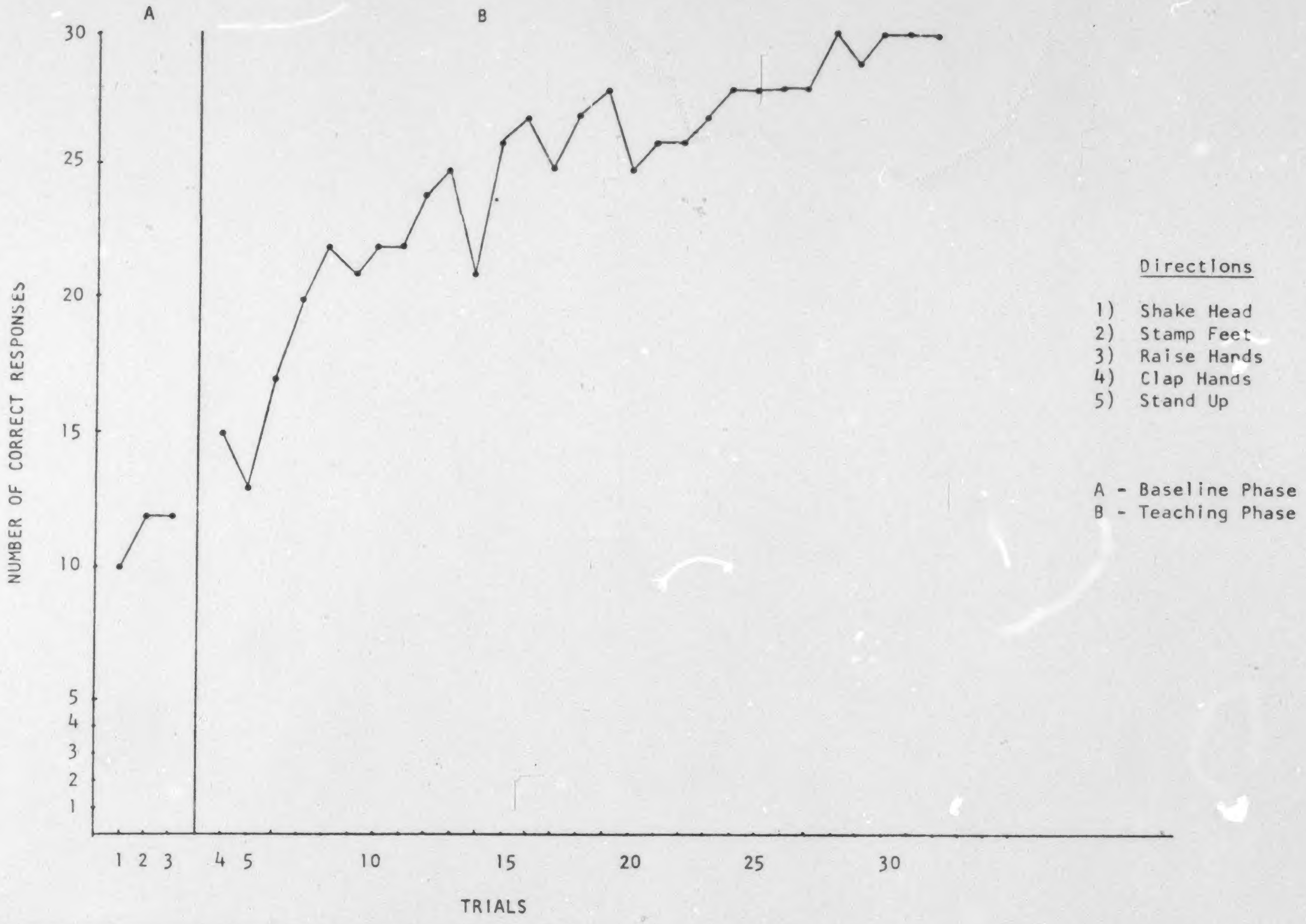


Figure 1B

Verbal Direction Following - One-Component Distant

(Ss #1, #2, #3, #4, #5 & #6)

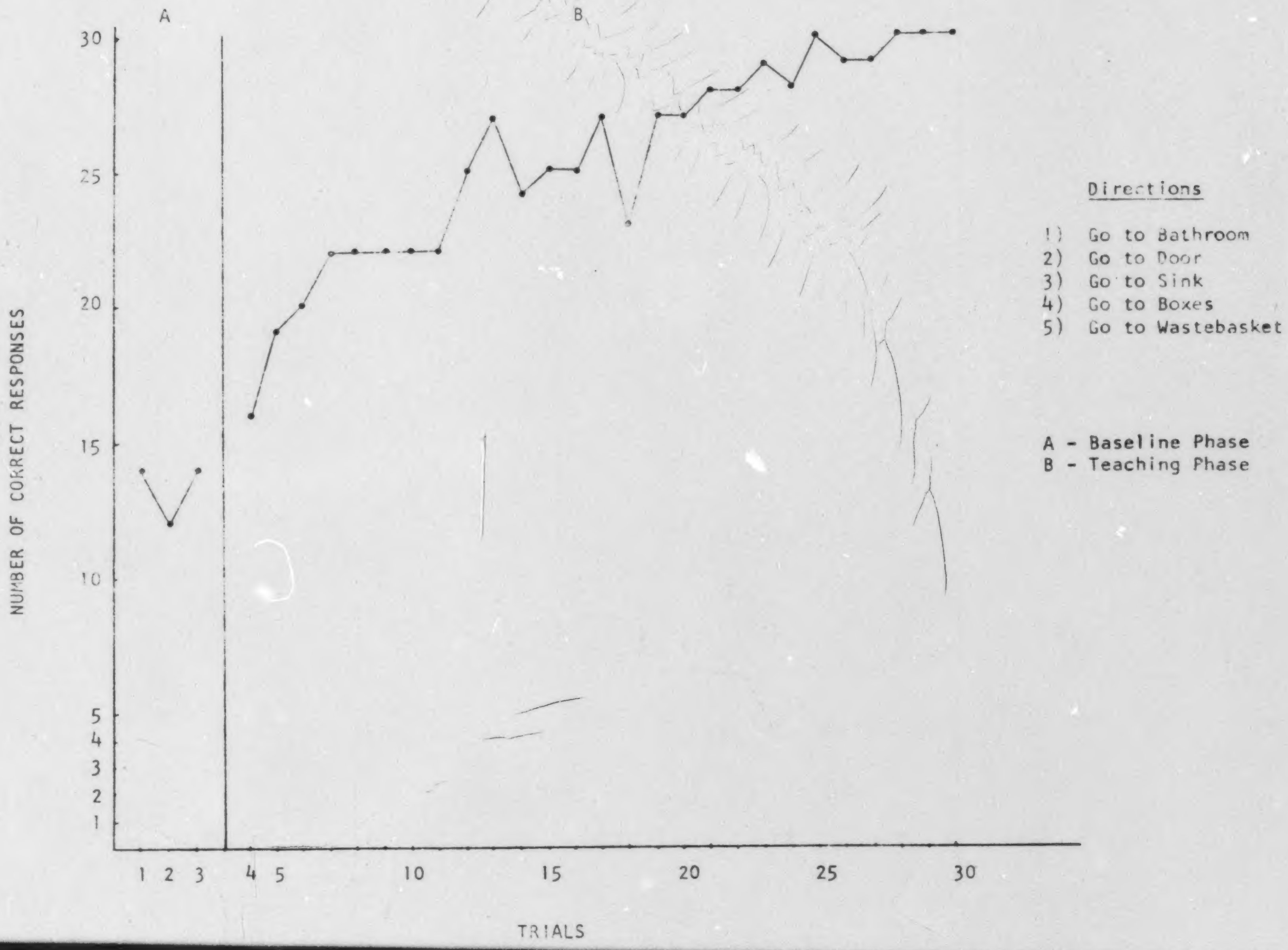


Figure 1C

Verbal Direction Following - Two-Component Local

(Ss #1, #2, #3, #4, #5 & #6)

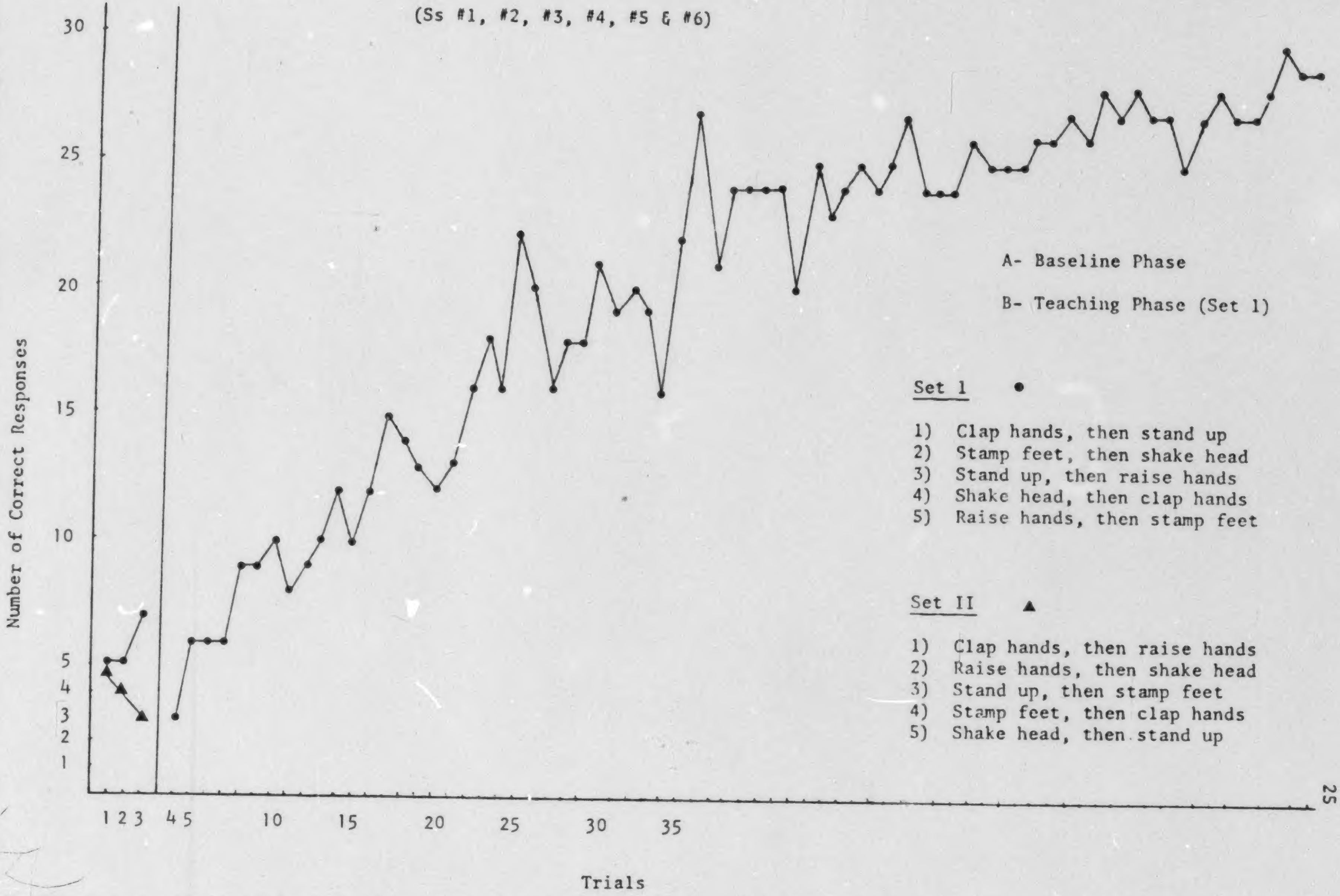
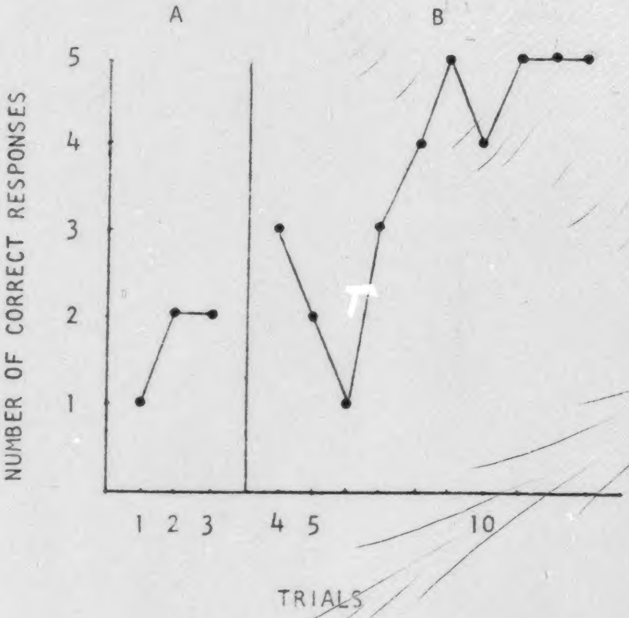


Figure 2A

Verbal Direction Following - One-Component Local

(S #3)



A - Baseline Phase
B - Teaching Phase

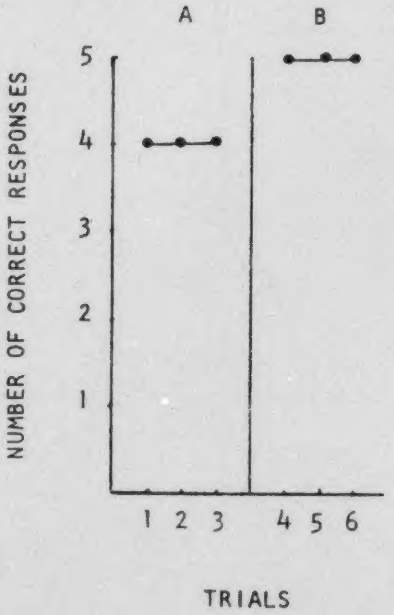
Directions

1) Stand Up
2) Clap Hands
3) Raise Hands
4) Stamp Feet
5) Shake Head

Figure 2B

Verbal Direction Following - One-Component Distant

(S #3)



A - Baseline Phase
B - Teaching Phase

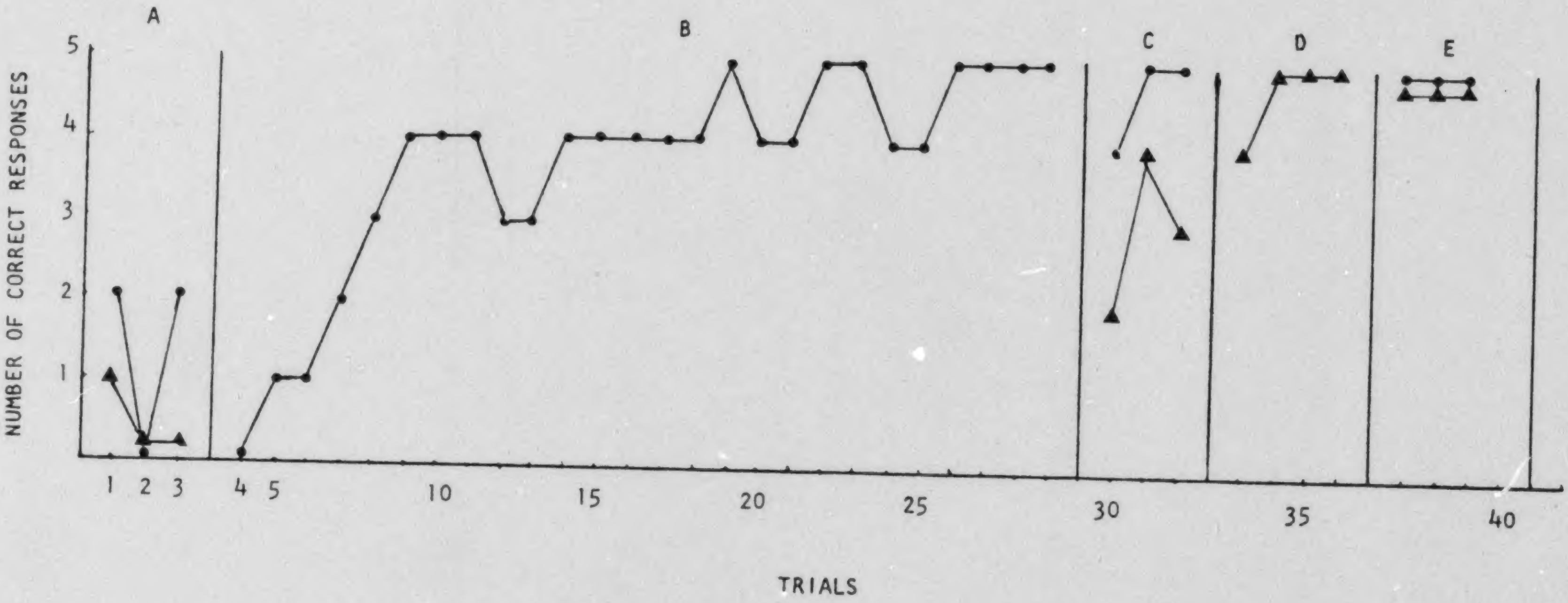
Directions

1) Go to Door
2) Go to Sink
3) Go to Boxes
4) Go to Coatroom
5) Go to Wastebasket

Figure 2C

Verbal Direction Following - Two-Component Serial Directions

(S #3)



● Set I

Clap hands, then stand up
Stamp feet, then shake head
Stand up, then raise hands
Shake head, then clap hands
Raise hands, then stamp feet

▲ Set II

Clap hands, then raise hands
Raise hands, then shake head
Stand up, then stamp feet
Stamp feet, then clap hands
Shake head, then stand up

A - Baseline Sets I, II
B - Teaching Set I
C - Re-baseline Sets I, II
D - Teaching Set II
E - Re-baseline Sets I, II

Location Concept Program

This program is essentially an extension of the verbal direction program presented earlier as well as a precurser to programs that will be implemented in the future that involve more complex auditory and visual discrimination and receptive language skills. For example, in the verbal direction program students were taught to respond to such verbal cues as "go to the door" and "go to the wastebasket". In this program the students were taught to respond to more complex verbal cues: "stand in front of Ernestine", "stand behind the easel", or "stand next to the desk". In other words, this program not only required that the students go to a particular person or object but also required that they fix themselves at a particular location in relation to that person or object.

It is intended that more complex programs will be developed utilizing the skills acquired here as well as those acquired in other programs. For example, a more complex program might include such verbal cues as "Put 2 blocks in the box", "Take the red sticks out of the bag", "Hammer the nail in each of the holes on the wood", "Go to the closet and bring back 4 pencils and 5 notepads".

There are at least three additional points that should be made before the more formal aspects of the program are considered. First the program was initially designed for application to all of the students in Classroom B. However, it soon became apparent that the program, as initially designed, was not appropriate for all. Thus, the teacher arrived at a series of program modifications that she determined might facilitate acquisition. Second, the students were initially requested to position themselves in relation to one of the teachers in the room in the anticipation that a person would have more subjective stimulus value than objects and thus would facilitate acquisition. Subsequently, the students were requested to position themselves in relation to various objects

BEST COPY AVAILABLE

in the room. Third, the teacher was primarily concerned with teaching the students location concepts. A concept as the term is used here refers to some level of generalization across a stimulus dimension. For example, assume that a student was taught to stand "behind" an easel. Then the student was asked to stand "behind" a desk. In the two cues the words stand behind are constant and the objects that student is asked to stand behind are varied. If the student does, in fact, stand behind the desk without prior training, then one interpretation might be that the student understands what stand behind means and this understanding would allow him to stand behind any object, not just the objects which were involved in the training program. In other words, the student generalizes (stand behind) across a stimulus dimension (8 different objects).

Thus, parts of this program were designed to assess whether the students could generalize from trained tasks to untrained tasks. That is, the students were trained to respond to cues in relation to some objects and not trained to respond to cues in relation to other objects. Subsequently, the students were tested on their ability to relate to objects upon which they were not trained.

Students (Ss) and Materials

The 6 Ss in Classroom B (9, 10, 11, 12, 13 & 14) were involved and the performance of an individual S determined his or her progress through the components of the program as well as the specific teaching procedures utilized. At one part in the program 2 Ts were used: one T issued location directives and the other T functioned as a reference point. In another part of the program only one T was required. The 6 Ss were seated in a semi-circle facing the reference person or object. The T who issued the location directives changed position from one side of the semi-circle to the other. In addition, to a practice teacher, the materials used as reference points were as follows: standard children's chair, bookcase, teacher's desk and artist's easel. It should be noted that the semi-circle of Ss was moved about the room so that Ss always faced the object upon which they were being tested.

Part A

Instructional Sequence

In effect two different programs were necessary and thus the two programs will be presented independently here. The program as it was initially designed seemed appropriate for 2 Ss (9 & 11) and will be presented first. A modified version of the initial program which was necessary for Ss 10, 12, 13 and 14 will be presented in Part B.

The content of Part A consisted of instructing an S to stand in front of, next to, and behind a person and four different objects in the room. The directives and objects were arranged into 5 sets of three directions each. These sets are presented below:

Set I
- A) Ss were instructed to stand in front of a person (practice teacher).
- B) Ss were instructed to stand next to a person (practice teacher).
- C) Ss were instructed to stand behind a person (practice teacher).

Set II
- A) Ss were instructed to stand in front of a chair.
- B) Ss were instructed to stand next to a chair.
- C) Ss were instructed to stand behind a chair.

Set III
- A) Ss were instructed to stand in front of a bookcase.
- B) Ss were instructed to stand next to a bookcase.
- C) Ss were instructed to stand behind a bookcase.

Set IV
- A) Ss were instructed to stand in front of a desk.
- B) Ss were instructed to stand next to a desk.
- C) Ss were instructed to stand behind a desk.

Set V
- A) Ss were instructed to stand in front of an easel.
- B) Ss were instructed to stand next to an easel.
- C) Ss were instructed to stand behind an easel.

Teaching Procedures for Ss 9 and 11

Baseline measures of Sets I through V

Prior to instruction baseline measures of the ability of S_9 and S_{11} to perform the tasks required by Sets I through V were obtained in the following manner.

One T stood directly in front of S_9 and another T_1 who was sitting to the side instructed S_9 by saying, "S_9 stand in front of (name of T_2, the reference person)". Regardless of the response of S_9 T_1 said "Thank you", recorded the correctness or incorrectness of the response and provided a different cue to S_{11}. This rotation of cues was continued until Ss 9 and 11 were given 3 opportunities to respond to each of the 3 directions required by Sets I through V.

Subsequent to baseline measurement instruction was initiated on Set I. The specific steps implemented by the T to teach the responses required by Set I are as follows:

1) T_2 stood directly in front of Ss 9 and 11 and T_1 sat to the side and gave the cue, "S_9 stand (in front of) (name of T_2 standing)". If S_9 positioned himself in front of T_2, T_1 smiled, said "Good, etc." issued a consumable consequence, recorded a correct response (+) on the data sheet and presented a different cue (i.e., "S_{11} stand (next to) T_2") to S_{11}, etc.
2) If S_9 did not respond or did so incorrectly T_1 said "No!", repeated the cue "S_9 stand (in front of) T_2" and modeled the correct response by standing in front of T_2. If S_9 correctly imitated T_1's model T_1 smiled, said "Good, etc.", did not provide a consumable consequence, recorded "M" (model) on the data sheet and gave a different cue to S_{11} etc.
3) If S_9 did respond or did so incorrectly T_1 said "No!", repeated the verbal cue "S_9 stand (in front of) T_2" and primed the response by physically guiding S_9 through the correct response. T_1 then provided only social consequences and recorded "P" prime on the data sheet. S_{11} was then presented with a different cue, etc.
4) When all priming and modeling cues were faded and Ss 9 and 11 made 9 consecutive correct responses, instruction was terminated.

When an S reached criterion on Set I measures of their ability to respond to the cues of Sets II, III, IV and V were again obtained. If the Ss did not perform at criterion on Sets II, III, IV, V they were given instructions on a second set and then baseline measures were again obtained. This sequence was followed until each S responded correctly to the three directions of each of the five sets on three consecutive occasions. That is, until an S made 45 consecutive correct responses across the 5 sets of directions.

Results

Both Ss 9 and 11 ultimately performed at criterion (45 consecutive correct responses across 5 sets of directions), and the performance pattern of each S will be presented graphically in Figures 1 and 2. However, two points should be emphasized: A) It was necessary to teach S_9 to respond appropriately only to the directions of Sets I, II, and IV before criterion responding on all 5 sets was obtained; B) It was necessary only to teach S_{11} (using slight modifications in the teaching procedures described above) to respond appropriately to the directions of Set I before criterion responding on all sets was obtained. In other words, it appeared that Ss 9 and 11 acquired the skill of generalizing the location cues in front of, next to and behind across different objects.

Table 1 below contains the number of correct responses made on Sets I through V by S_9 during four baseline periods.

TABLE 1

Number of correct responses (out of a possible 9 correct responses) S_9 emitted during four baseline periods.

	Trials 1-3 1st Baseline		Trials 38-40 2nd Baseline		Trials 53-55 3rd Baseline		Trials 86-88 4th Baseline
Set I	1	Teaching of Set I	9	Teaching of Set II	9	Teaching of Set IV	9
II	5		6		8		9
III	3		9		9		9
IV	5		3		1		9
V	4		3		7		9
Total	18		30		34		45

As can be discerned from Figure 1 and Table 1, $\underline{S}_9$ made a total of 18 of a possible 45 correct responses during the initial baseline period (trials 1-3). A total of 34 teaching trials were required before $\underline{S}_9$ responded correctly to each of the 3 directions in Set I on 3 consecutive occasions (trials 4-37).

During the second baseline period (trials 38-40) $\underline{S}_9$ made 30 of a possible 45 correct responses. It should be noted that during trials 38-40 $\underline{S}_9$ made 9 correct responses to the directions of Sets I and III even though instruction related to the object involved in Set III had not been received. Then only 12 teaching trials were required to teach $\underline{S}_9$ to respond correctly to the 3 directions of Set II on three consecutive occasions.

During the third baseline period (trials 53-55) $\underline{S}_9$ emitted 34 of a possible 45 correct responses which included criterion responding to Sets I and III and 8 of 9 correct responses to Set II. Subsequently, instruction on Set IV was initiated and 19 teaching trials were required before $\underline{S}_9$ performed 9 consecutive correct responses to the directions of Set IV.

Subsequent to criterion performance on Set IV the fourth baseline period was initiated (trials 75-77) and baseline measures on Set IV were obtained before measures on Sets I, II, III and V. However, only 7 of a possible 9 correct responses were obtained (trials 75-77) on Set IV. Thus, $\underline{T}$ decided that further instruction and a change in the criterion were needed. The performance criterion was changed to 15 consecutive correct responses to Set IV and instruction was initiated. $\underline{S}_9$ reached this criterion after only 8 teaching trials (trial 85).

During the fourth baseline period $\underline{S}_9$ responded correctly to the directions of Sets I through V on three consecutive occasions. That is, $\underline{S}_9$ performed the tasks of Sets III and V even though instruction was not received.

The performance of $\underline{S}_{11}$ is even more dramatic than that of $\underline{S}_9$ in that during the first baseline period (trials 1-3) $\underline{S}_9$ made 8 of a possible 45 correct responses to the directions of Sets I through V. Instruction of the tasks required by Set I was initiated at trial 4 and criterion performance on Set I was not obtained until trial 92.

As can be discerned the performance of $\underline{S}_{11}$ during trials 4 through 58 was quite erratic and it appeared doubtful that $\underline{S}_{11}$ would reach criterion unless a modification in the teaching procedure was made. Thus, on trial 59 the following two additional teaching cues were introduced:

> While T issued a verbal cue, T also pointed to the correct position and modeled the correct response.

As can be discerned from Figure 2, $\underline{S}_{11}$ responded correctly to the 3 directions of Set I with the aid of the 2 additional cues during trials 59 through 65. At trial 55 the modeling cue was removed and criterion responding was maintained. At trial 69 the pointing cue was removed and the original teaching procedures were reinstated. Criterion performance was obtained at trial 93 after 25 teaching trials.

During the second baseline period (trials 94-96) $\underline{S}_{11}$ responded perfectly to the directions of Sets II, III, IV and V.

The performance of $\underline{S}_{11}$ during the second baseline period offers dramatic support for the hypothesis that $\underline{S}_{11}$ had acquired at least some parameters of the concepts in front of, next to, and behind.

Part B

Part B is concerned with the performance of *S*s 10, 12, 13 and 14.

Initially all 6 *S*s in Classroom B received instruction on the program as it was described in Part A. However, the performance of *S*s 10, 12, 13 and 14 was such that major modifications in the original program were warranted. In an attempt to communicate the substance of the modifications the performance of S_{13} will be presented in detail. The performance of S_{13} is selected for presentation in that it seems representative of the performance of, and modification used with, *S*s 10, 12, and 14.

S_{13}

During trial 1 through 57 (See Figure 3) S_{13} received instruction as it was described in Part A. During trial 58 through 68 the program modifications made for S_{11} were also made for S_{13} with essentially the same effect. During trials 69 through 109 the original program was used and as can be observed was not sufficient to obtain criterion performance on Set I. Thus, the following modifications were made:

1) The original Set I tasks were divided into 3 subsets as follows: Subset Ix included the direction "S_{13} stand in front of (*person*)"; Subset Iy included the directions, "S_{13} stand in front of (*person*) and S_{13} stand next to (*person*)"; and Subset Iz included the directions "S_{13} stand in front of (*person*); S_{13} stand next to (*person*); and S_{13} stand behind (*person*)".
2) Instead of the consumable consequences used previously, *T* now would "blow soap bubbles" after S_{13} made a correct response.
3) S_{11} (who had completed Part A) was used as a reference person.
4) If S_{13} made an incorrect response, S_{13} was asked to model the correct response.
5) Criterion was changed to five consecutive correct responses on each subset.

Results

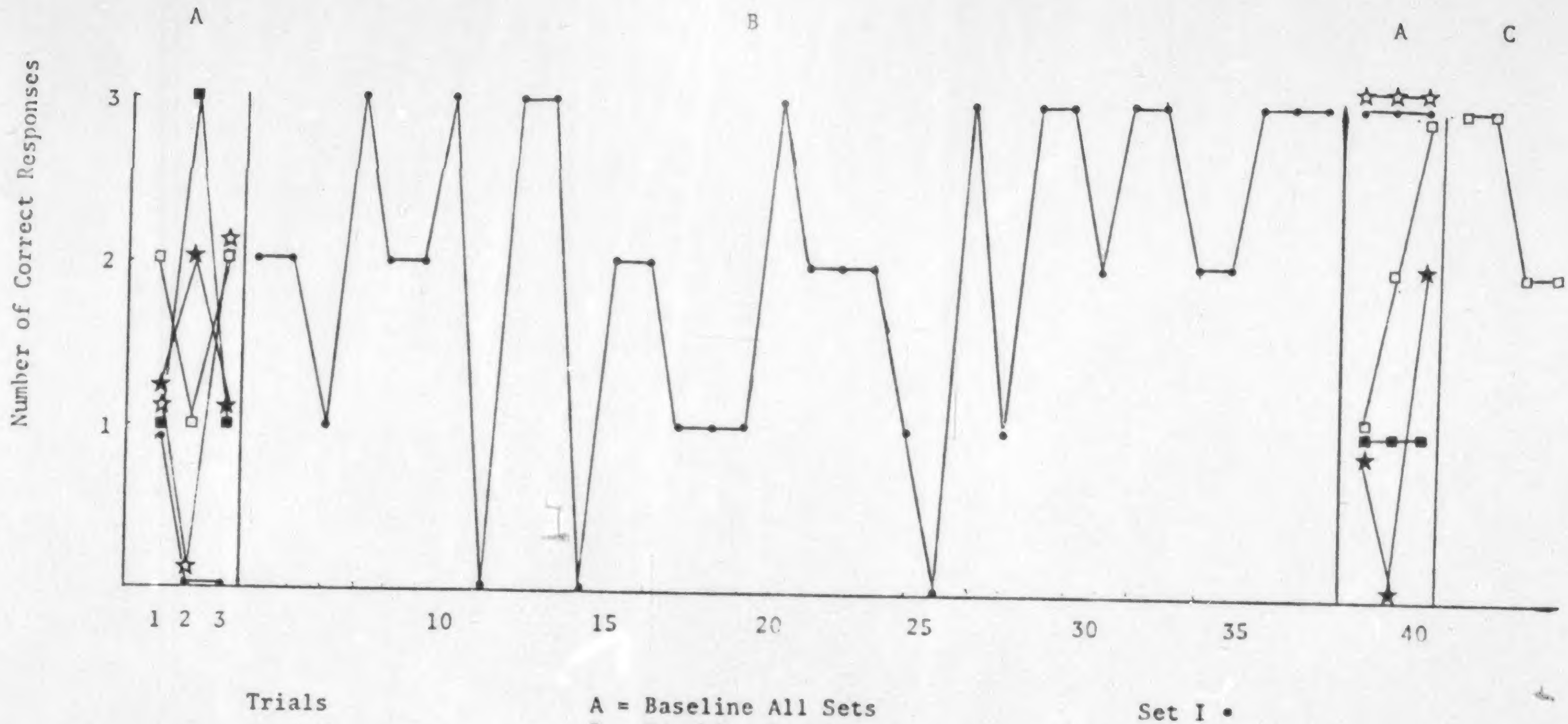
At trial 110 the modified teaching procedures described above were implemented. As can be discerned from Figure 3 (trials 110-139) 30 teaching trials were necessary before $\underline{S}_{13}$ reached criterion on Subset 1x. At trial 140 Subset 1y was introduced and $\underline{S}_{13}$ reached criterion after only 7 teaching trials. In addition, it should be noted that $\underline{S}$s 10, 12 and 14 had also reached criterion on Subsets 1x and 1y.

Unfortunately, the school year ended before further progress in the program could be made.

FIGURE 1

Location Concept Program

S_9



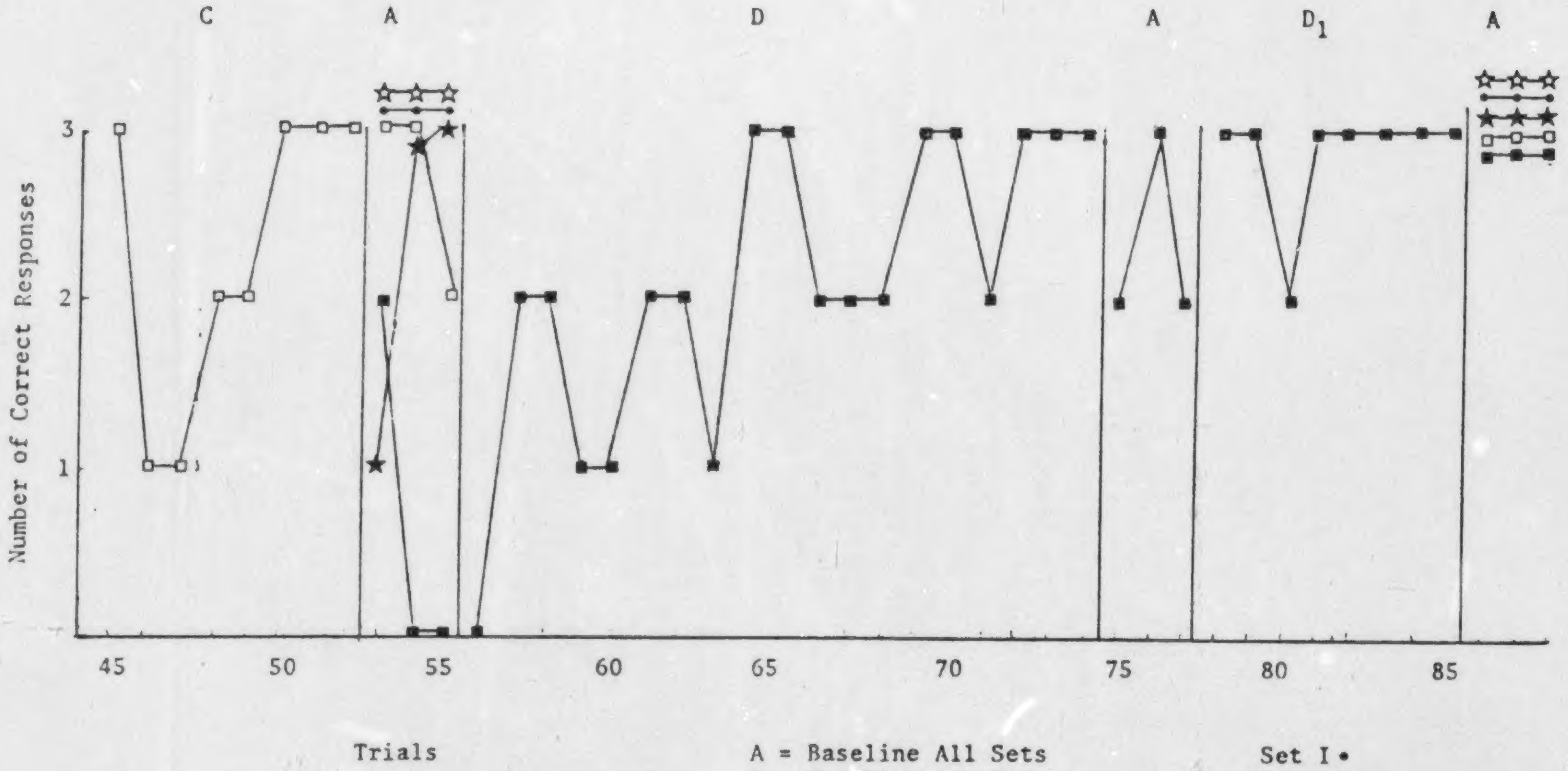
A = Baseline All Sets
B = Teaching Set I
A = Baseline All Sets
C = Teaching Set II
A = Baseline All Sets
D = Teaching Set IV
A = Baseline Set IV only
D_1 = Teaching Set IV with extended criterion
A = Baseline All Sets

Set I •
Set II □
Set III ☆
Set IV ■
Set V ★

FIGURE 1 (cont.)

Location Concept Program

S$_9$



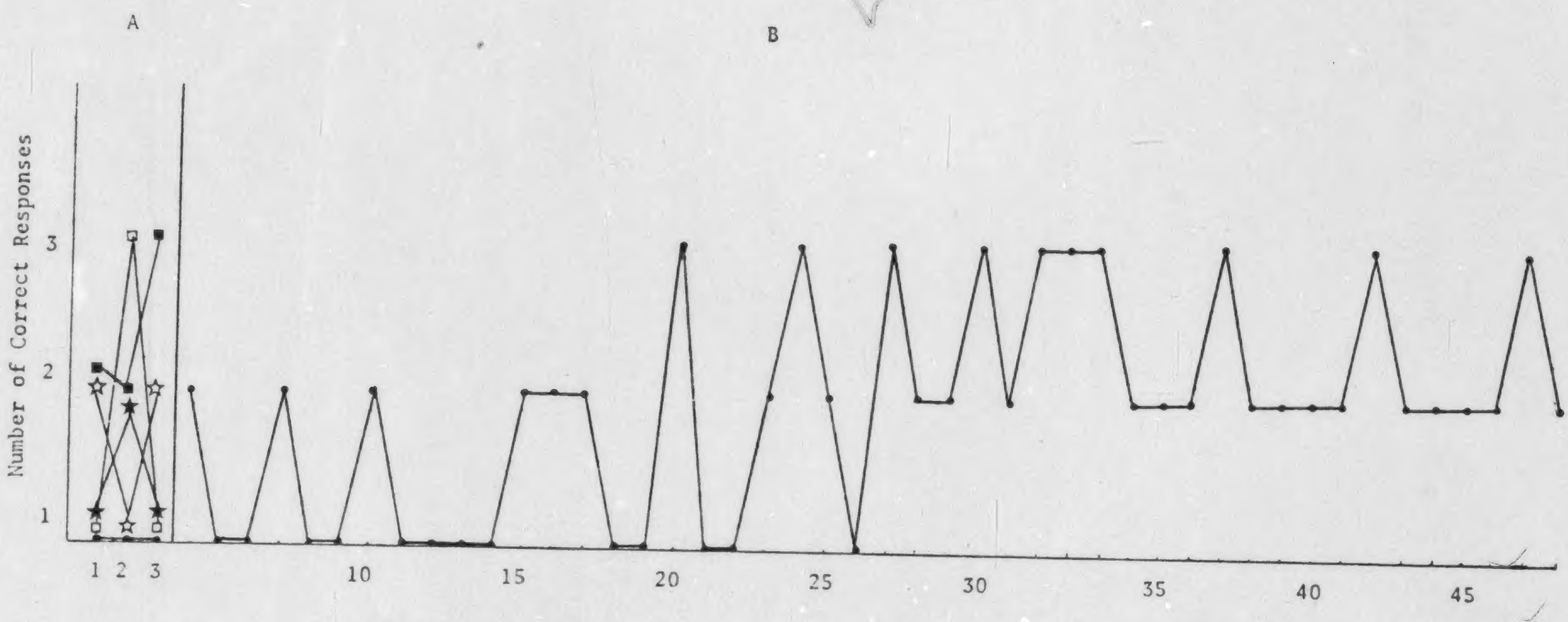
A = Baseline All Sets
B = Teaching Set I
A = Baseline All Sets
C = Teaching Set II
A = Baseline All Sets
D = Teaching Set IV
A = Baseline Set IV only
D$_1$ = Teaching Set IV with extended criterion
A^1= Baseline All Sets

Set I •
Set II □
Set III ☆
Set IV ■
Set V ★

FIGURE 2

Location Concept Program

$\underline{S}_{11}$



Trials

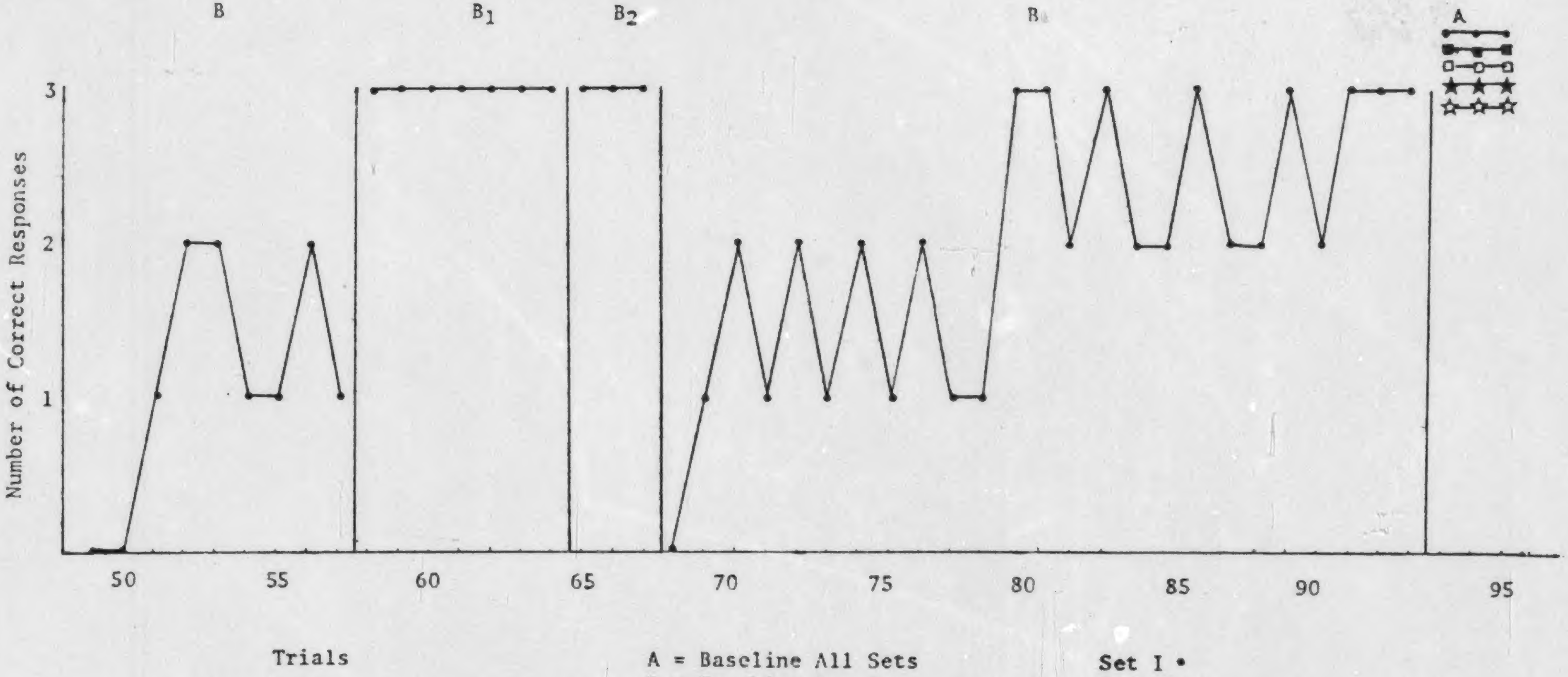
A = Baseline All Sets
B = Teaching Set I
B_1 = Teaching Set I with
(modeling and pointing cues)
B_2 = Teaching Set I with
(pointing cue only)
B = Teaching Set I
A = Baseline All Sets

Set I •
Set II □
Set III ☆
Set IV ■
Set V ★

FIGURE 2 (cont.)

Location Concept Program

$\underline{S}_{11}$



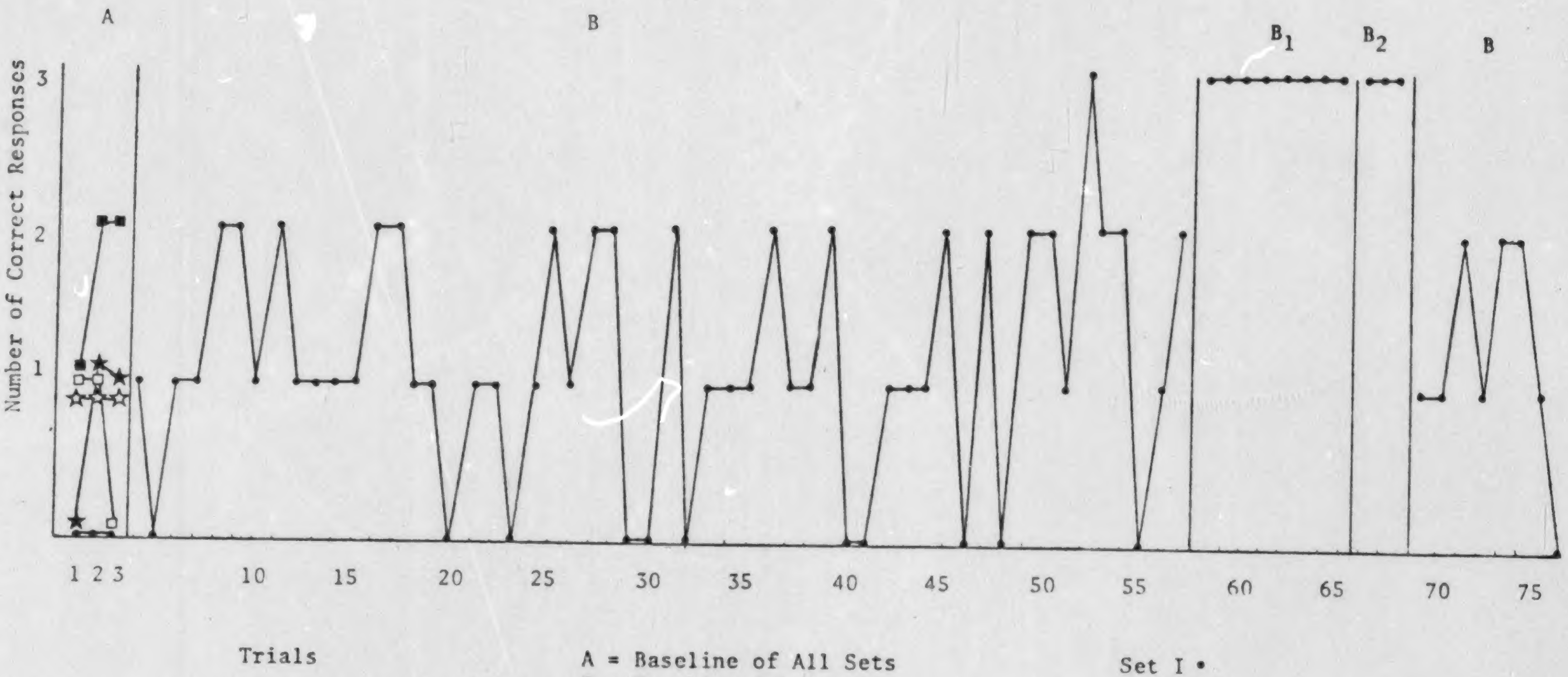
A = Baseline All Sets
B = Teaching Set I
B_1 = Teaching Set I with (modeling and point cues)
B_2 = Teaching Set I with (pointing cue only)
B = Teaching Set I
A = Baseline All Sets

Set I •
Set II □
Set III ☆
Set IV ■
Set V ★

FIGURE 3

Location Concept Program

S13



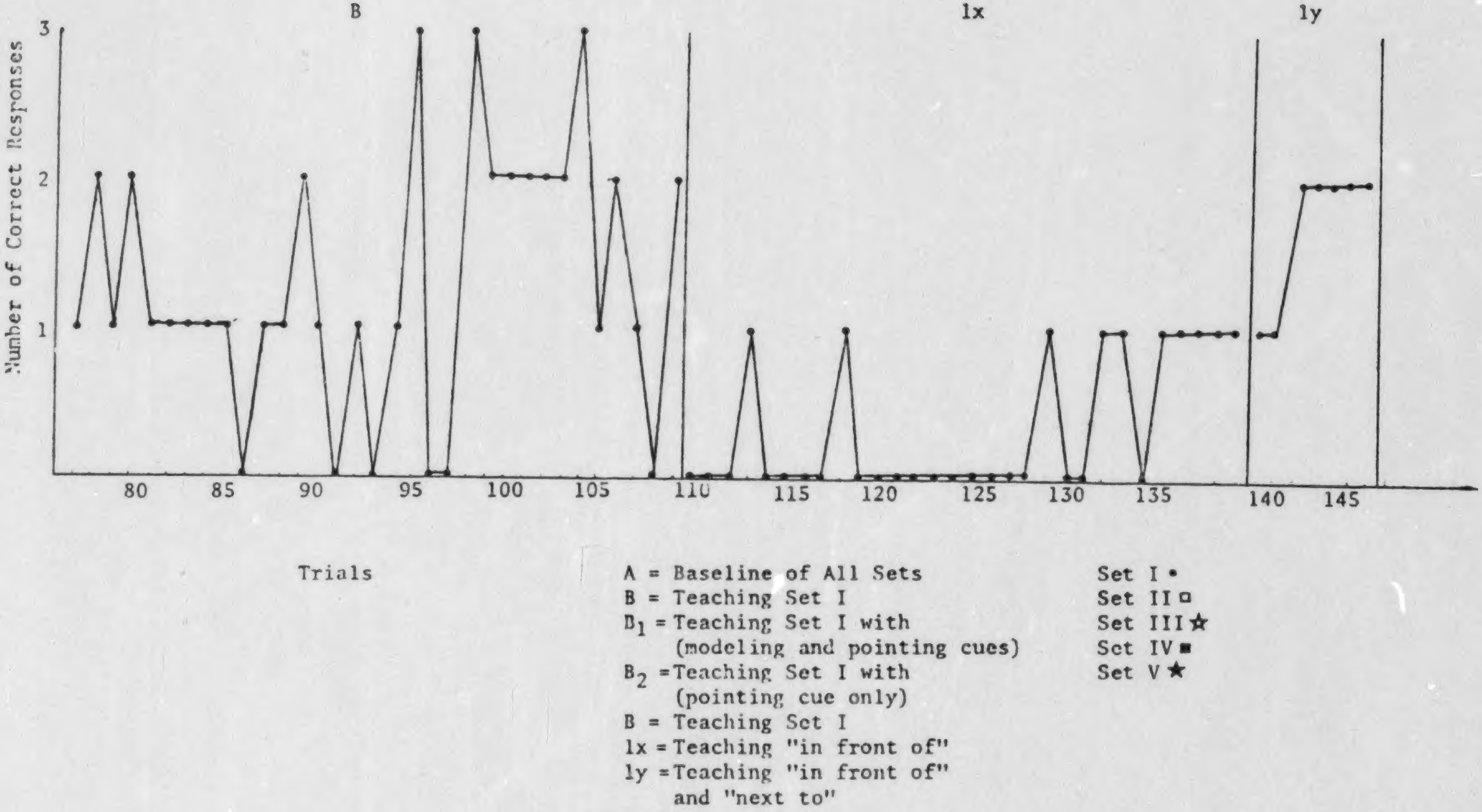
A = Baseline of All Sets
B = Teaching Set I
B_1 = Teaching Set I with (modeling and pointing cues)
B_2 = Teaching Set I with (pointing cue only)
B = Teaching Set I
1x = Teaching "in front of"
1y = Teaching "in front of" and "next to"

Set I •
Set II □
Set III ☆
Set IV ■
Set V ★

FIGURE 3 (cont.)

Location Concept Program

$\underline{S}_{13}$



BEST COPY AVAILABLE

Receptive Language Program

> "The ability to point at, pick up, or otherwise differentially and correctly respond to named objects, people, events, or concepts is the goal of receptive vocabulary training (Bricker and Bricker, 1970, p. 105).

The development of at least the receptive language skills delineated above are crucial instructional objectives of teachers of young severely handicapped students in that these students are confronted daily by the necessity to function in a speaking world in which words are discriminative stimuli for specific communicative responses. The inability to respond differentially to verbal cues presented by parents, siblings, and teachers may account for much of the inappropriate or deficient communication skills manifested by these students. If these students do not understand that words represent specific objects, people, events, or concepts in their environment, it is quite unlikely that they will be able to follow verbal directions, respond to simple questions, or even use verbal cues to produce environmental changes of their choosing.

Thus, the primary objective of this program was to teach young severely handicapped students to touch objects and pictures in response to verbal cues. The objects and pictures selected for the instructional program were those which are present in the home and school environments of most young children. However, it should be noted that ancillary objectives were to teach the students basic attending skills, to function in group instructional settings and to perform basic pre-reading skills.

Students and Materials

Students (Ss). Twelve Ss (Classes A and B) were involved and the program was conducted in a manner that allowed each S to progress through the components of the program at his own rate.

It should be noted that at least 10 different teachers (Ts) were involved in the implementation of the program in Classes A and B. However, as the teaching procedures were quite standard it was not felt that inter-teacher variations substantially affected performance. All instruction was conducted in small group arrangements. That is, one T to 2, 3, or 4 Ss.

Materials. The materials utilized included both three dimensional objects and pictures. Selection of these materials was based upon the following considerations (Chalfant et al., 1967):

1) The objects, people, events or concepts present in the Ss environment and how frequently Ss encountered them.
2) The ease with which words could be discriminated from each other based upon auditory cues. For example, sock, block, and clock were not selected as an initial set of objects to be taught as the required auditory discrimination skills seemed too advanced.
3) In an attempt to make the program as concrete as possible only words with tangible referents were utilized.
4) Finally, special priority was given to items utilized within ongoing instructional programs and routine school activities.

Table I depicts the initial objects selected for the teaching program.

TABLE I

Objects Used In Receptive Language Program

TOYS	ITEMS RELATED TO DAILY LIVING SKILLS	CLASSROOM MATERIALS
Set I	Set II	Set III
doll book truck	cup spoon napkin	paper pencil crayon
Set IV	Set V	Set VI
puzzle beanbag block	toothbrush soap papertowel	box scissors chalk

Table 2 depicts the initial pictures selected for the teaching program.

BEST COPY AVAILABLE

TABLE 2

Pictures Used in Receptive Language Program

Set VII

doll
book
truck

Set VIII

cup
spoon
napkin

Set IX

paper
pencil
crayon

Set X

scissors
toothbrush
safety pin

Set XI

tree
car
kite

Set XII

bathtub
telephone
flag

Set XIII

barn
bed
fence

In addition to consumable reinforcers (cereal, water, candy) data sheets were constructed that allowed for the continuous recording of all responses to instructional cues. These data sheets are presented at the end of this report.

As can be discerned from Table 1 Ss were initially required to choose one object from a set of three. However, other investigators (e.g., Bricker and Bricker, 1970) have utilized a two-choice discrimination paradigm and defended such an arrangement with the following thesis:

> "There are several advantages to the two-choice situation, the most important being the ability of the trainer to discriminate between random performance and behavior that is either reliably above or below chance (the latter operating as an index of the child's "negativism"). In addition, any choice situation involves a number of component stimuli which can potentially control the child's responses. In a two-choice situation, the child can respond to position, form, color, size, consequence of the previous choice, array, number, or even cues unknown to the experimenter. In training, the basic strategy is to bring the child's behavior under control of one dimension and then systematically shift this dimension by changing the words that indicate the correct choice. If the child responds to some dimension other than the reinforced one, the two-choice situation offers the most flexible method for detection and correction of the problem."
> p. 105

While acknowledging the cogency of the thesis of Bricker and Bricker, several factors were considered potential advantages of the use of a three-choice task as a starting point in an instructional sequence.

1) The reinforcement schedule in effect during the initial portions of the instructional program was continuous in that each correct response resulted in the delivery of a reinforcer. Therefore, in a two-choice situation an S̲ could respond at a chance level and still receive reinforcement for 50 percent of his responses. This was considered to be a high schedule of reinforcement for chance level responding and might be adequate to maintain such chance responding without S̲ acquiring the desired discriminations (i.e., extinction of responses to the incorrect stimulus object and 100 percent correct responding to the correct stimulus object). The 33 1/3% average level of reinforcement that would result from an S̲'s chance responding in a three-choice situation was considered to be more desirable, in that it represented a potentially weaker schedule of reinforcement for chance responding.
2) Perhaps related to #1 above is the tendency for severely handicapped S̲s to perseverate upon a response to either one or the other of the two objects or to a particular location. It was hoped that such perseverative responding would be less likely to occur when three-choice situations are presented.
3) Presentation of three objects require more difficult scanning skills than those required by 2 choice tasks. That is, S̲s had to look at each of the three objects displayed before them and touch the correct object to receive reinforcement. Scanning of a stimulus array is considered highly desirable for correct responding in other programs requiring more complex discriminations (e.g., reading, handwriting).

In this program the three-choice situation was initially implemented with all Ss. In the event that some difficulty was encountered in this situation, individual Ss were presented the two-choice situations. In effect, the two-choice situation was employed as a back-up procedure. That is, if an S failed to progress in the initial three-choice situation, instruction was begun utilizing the two-choice procedure.

Instructional Sequence

The instructional program was divided into the following steps.

Step I - Baseline. Baseline measures of each S's performance on all steps were obtained prior to any instruction on those steps. These measures were conducted in a group setting, with Ss alternating turns. For each step an S was required to respond to T's verbal cue in the presence of the appropriate instructional materials. The response was recorded by T without indicating to an S the accuracy of that response; that is, all responses were followed by T's neutrally spoken, "Thank you." A baseline trial (and all teaching trials) was completed when each S had been given an opportunity to respond to 1 presentation of all of the items comprising a set. A minimum of two such trials was obtained for each S prior to instruction on a task.

Step II - Touching objects in response to imitative cues provided by the teacher. The second step was to establish touching responses. That is, Ss were taught to touch an object placed on the table in front of them. This touching response was taught to occur following a demonstration (model) of this response by T,as imitative touching would be a crucial component of future instructional procedures.

Procedures used to teach imitative touching

1) T placed an object on the table directly in front of one of the Ss in a group and said, "S_1, touch (object)." If S_1 touched the object, T

then smiled, said "Good", provided a consequence (usually a consumable in the form of a piece of cereal), recorded a correct response on the data sheet, and presented a different object to S_2, etc.

2) If S_1 did not touch the object, *T* repeated the verbal cue, "*T*, touch (*object*)" and demonstrated the correct response by touching the object. Then *T* repeated the verbal cue, "S_1, touch (*object*)" and waited for S_1 to respond. If S_1 imitated *T*'s demonstration and touched the object, *T* immediately smiled, said "Good", recorded an "M" on the data sheet and presented a different object to S_2, etc.

3) If S_1 did not imitate *T*'s demonstration, *T* repeated the verbal cue, "S_1, touch (*object*)" and primed the response by physically guiding S_1 through the correct response. When S_1 completed the touching response with *T*'s prompting, *T* smiled, said "Good", recorded a "P" and presented a different object to S_2, etc. On each subsequent trial *T*'s prompting of S_1 was attenuated (i.e., *T* provided a decreasing amount of physical guidance) until S_1 performed the touching response as an imitation of *T*.

4) The procedures described in 2 and 3 above were followed until each *S* touched the object *T* touched on 5 consecutive occasions. That is, the procedures were adhered to until each *S* was taught to imitate the touching responses of *T*.

Step III - *Touching objects in response to verbal cues provided by the teacher*. After *Ss* were taught to imitate the touching of objects following *T*'s demonstration, the second step in the program was begun. In Step III the objects to be taught were presented to an *S* and *T* verbally labeled one of them. *S* was then required to touch the object *T* labeled. The two or three objects comprising each set were presented in a random arrangement in front of each *S*. The initial object named by *T* was randomly selected. However, on the subsequent opportunities of each *S* to respond, *T* randomly selected for naming only previously unnamed objects of the set. After each object that was a component of a set had been named once, the selection procedure was recycled. In addition, attempts were made to minimize the naming of the same object for different *S*s on consecutive presentations.

Procedures used to teach touching of objects in response to verbal cues.

1) *T* placed 3 objects on the table directly in front of S_1 and said, "S_1, touch (*object*)." If S_1 touched the object, *T* then smiled, said "Good", provided a consumable consequence, recorded a correct response, and presented a different cue to S_2, etc.
2) If S_1 touched an incorrect object, *T* said, "No", repeated the verbal cue, "*T*, touch (*object*)" and demonstrated the correct response by touching the object. Then *T* repeated the verbal cue, "S_1, touch (*object*)" and waited for S_1 to respond. If S_1 imitated *T*'s demonstration, *T* smiled, said "Good" but did not provide a consumable consequence and recorded an "M" on the data sheet. Tangible consequences were provided only when *S*s responded correctly to *T*'s initial verbal cues. Social consequences were provided for correct imitations of *T*'s demonstrations. Subsequently, the objects were placed in front of S_2, etc.
3) If S_1 did not touch the correct object following *T*'s demonstration, *T* said, "No", repeated the verbal cue, "S_1, touch (*object*)" and primed the correct response. When *S* completed the touching response with *T*'s assistance, *T* provided social consequences and recorded a "P" on the data sheet.
4) Instruction continued until all priming and modeling cues were faded and an *S* made 3 consecutive correct responses (touched the named object) in response to the labels of each of the 3 objects or a total of 9 consecutive correct responses. Subsequently, 3 new objects were selected and the process was repeated with each set of objects.

BEST COPY AVAILABLE

Step IV - Teaching the touching of pictures in response to verbal cues. The components of Step IV are identical to those of Step III except that pictures were substituted for objects. The first 3 sets of pictures used as stimuli in Step IV were drawings of the objects which comprised the first 3 sets of objects used in Step III. Pictures of objects already taught were utilized in an attempt to enhance the transition from 3 dimensional to 2 dimensional stimuli.

In some instances adaptations or modifications of the teaching procedure were employed with individual Ss. Such adaptations became necessary whenever a student failed to progress on some component of the instructional program. Basically there were 3 types of program adaptations: (1) The verbal directions used by the teachers were shortened from, "Touch (object)" to naming only the object itself, "(Object)". (2) The teacher touched and named each object prior to giving the verbal direction for the student to touch the object (e.g., T touched doll and said, "Doll", T touched book and said, "Book", then T said to S, "Touch book"). These additional verbal cues (T's naming of the objects) were faded out as an S began to touch the object named by the teacher. (3) As previously discussed, 3 object sets were occasionally reduced to 2 object subsets.

RESULTS

The performance of all 12 Ss are summarized in Table 3, however the detailed performances of only 3 Ss (#5, #9, & #14) are presented graphically. This approach was adopted since it appeared that the performances of Ss #5, #9, and #14 adequately represented the 3 performance trends manifested by the 12 Ss. Thus, graphic presentation of the 9 other Ss performances is too redundant to warrant inclusion. Generally, the 3 trends manifested by Ss may be described as:

1) two Ss (#8 & #14) who reached criterion on only the first few sets of objects;

2) four Ss (#1, #2, #5, & #6) who reached criterion on all the object sets and some of the picture sets, but required many teaching trials to do so; and

3) six Ss (#3, #4, #9, #11, #12, & #13) who reached criterion on all object sets either during initial testing (baseline conditions) or following a small number of teaching trials.

TABLE 3

WORD SETS REACHING CRITERION

Students	Sets of Objects						Sets of Pictures						
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII
#8	X												
#14	X	X											
#1	X	X	X	X	X	X	X						
#2	X	X	X	X	X	X	X	X	X	X	X		
#5	X	X	X	X	X	X	X	X	X	X	X	X	X
#6	X	X	X	X	X	X	X						
#3	X	X	X	X	X	X	Due to the high level of receptive language skills displayed by Ss 3, 4, 9, 11, 12, and 13 during instruction on the first 6 sets, instruction was initiated on tasks requiring more complex speech and language skills (e.g., object labeling, comprehension of verbs).						
#4	X	X	X	X	X	X							
#9	X	X	X	X	X	X							
#11	X	X	X	X	X	X							
#12	X	X	X	X	X	X							
#13	X	X	X	X	X	X							

BEST COPY AVAILABLE

It should be noted that two different criterion levels were adopted. During the testing (baseline) conditions criterion performance was defined as 6 consecutive correct touching responses to object or picture sets. During the teaching phases criterion was defined as 9 consecutive correct responses to object or picture sets.

Ss displaying the first type of performance (criterion on only a few sets) will be discussed first. The results of S #14 were selected to represent the responding typical of this level of performance. As can be discerned from inspection of Figure 1, S #14 performed inconsistently on the initial set of 3 objects (doll-book-truck). Therefore, Set I was reduced to two subsets involving two-choice tasks (doll-book; truck-book). Following the introduction of the first two-choice subset (doll-book) S #14's level of correct responding increased, but failed to reach the criterion level. Following the 68th teaching trial the teaching procedure was modified in an attempt to facilitate the acquisition of the receptive language skills. This modification consisted of touching and verbally naming each of the objects (doll-book) displayed before S #14 prior to giving the direction, "Touch (object)." It appears that this modification did result in an increased level of correct responding, in that S #14 reached criterion in 20 additional trials. Subsequently the extra verbal cues (naming object prior to directing S #14 to respond) were faded until the original instructional procedure was reinstated and S #14 responded at criterion level. At this point teaching the second two-choice subset (truck-book) was initiated and S #14 rapidly reached criterion (15 teaching trials). Finally, the original three-choice set was reinstated and criterion was attained after 13 teaching trials.

The next objects that were taught to S #14 (Figure 2) were contained in Set II (cup-spoon-napkin). Initially these objects were presented in the two-choice subsets; cup-spoon and spoon-napkin. However, S #14 made no errors on these subsets during baseline measures and Set II (the three-choice set) was taught in 10 trials.

Set III (paper-pencil-crayon) was reduced to the two-choice subsets, crayon-pencil and pencil-paper (Figure 3). Teaching was never successfully completed on the first pair of objects (pencil-crayon) and was finally discontinued after 100 trials. This set probably represents a poor choice for instruction due to the similarity of the stimulus objects. S #14 repeatedly reached the instructional criterion but failed to maintain the criterion level of responding in re-testing (re-baseline) situations.

The final object set on which S #14 received instruction was Set III (papertowel-soap-toothbrush). This set was reduced to the two-choice subsets; papertowel-soap; soap-toothbrush, and papertowel-toothbrush. During baseline measurement (Figure 4) S #14 responded correctly to the subsets soap-toothbrush and papertowel-toothbrush; but did poorly on the papertowel-soap subset. Subsequently, teaching was initiated on this subset and was not yet completed by the end of the school year.

A second performance level was displayed by 4 Ss (#1, #2, #5, & #6) who demonstrated little or no initial correct responding and required many teaching trials to reach the criterion level of responding. Typically these Ss showed poor progress on the initial set of three objects, (Set I, doll-book-truck) and therefore this set was reduced to the subsets; doll-book, book-truck and truck-doll. After requiring a large number of teaching trials to reach criterion on both the subsets and Set I itself, Ss began to reach criterion on subsequent 3 choice sets (Set II through Set XIII). Often the number of teaching trials required for an S to reach criterion decreased dramatically over previous sets. As the performance records of the 4 Ss are quite similar only the responses of S #5 are presented in detail.

Figures 5 & 6 depict the data of S #5 as he progressed through the 13 sets of objects and pictures. Student #5's responding on Set I (truck-doll-book) was inconsistent during both baseline and teaching phases of the program. This set was reduced to the subsets, doll-book and book-truck. However, teaching on these two subsets was unsuccessful in that a consistent level of correct responding was not obtained. Finally, instruction on objects comprising Set I was discontinued and the objects of Set II (cup-napkin-spoon) were introduced as the two choice subsets; cup-napkin, cup-spoon and spoon-napkin. After criterion was reached on each of these 3 subsets, Set II was presented in its entirety (spoon-napkin-cup) and the criterion level of responding was attained following 43 teaching trials. Subsequently Set I was re-presented as were the remaining 11 sets. These 12 sets required only 78 teaching trials to reach criterion; demonstrating #5's improved acquisition skill as the program progressed.

The final performance level was manifested by Ss #3, #4, #9, #11, #12, and #13. These Ss either displayed the desired receptive language skills during initial testing (baseline conditions) or acquired these skills following a small number of teaching trials. The results of S #9 were selected to represent the performance level of these Ss.

Figure 7 depicts the data of S #9 as she progressed through the first 6 sets of objects. As can be discerned, S #9 reached the instructional criterion on:

1) Set I (book-doll-truck) following 3 teaching trials;
2) Set II (cup-napkin-spoon) during baseline measurement;
3) Set III (paper-pencil-crayon) following 6 teaching trials;
4) Set IV (puzzle-beanbag-block) following 3 teaching trials;
5) Set V (toothbrush-soap-papertowel) following 5 teaching trials; and
6) Set VI (box-scissors-chalk) following 5 teaching trials.

As these 6 Ss displayed a high level of receptive language skills in regard to the initial 6 sets of objects, instruction was subsequently initiated on tasks requiring more complex speech and language skills (e.g., object labeling, comprehension of verbs). Thus, the instructional program for these 6 Ss was not continued through all 13 sets of objects and pictures described previously.

DISCUSSION

Several problems were encountered during initial attempts at teaching the above mentioned receptive language skills. Many of the students were not accustomed to the instructional situation, and thus displayed deficits in skills related to sitting in chairs, looking at the teacher and/or the materials displayed, responding to the teacher's verbal directions and working intensely at a task for an extended period of time. In addition many of the students initially displayed behaviors that were disruptive or incompatible with the acquisition of receptive language skills. These behavior problems were usually managed while instruction was in progress. However, several students' behavior was so severe (head banging, loud crying) that specific programs of intervention were instituted at the start of instruction. (More detailed accounts of the management problems encountered and the procedures utilized in their remediations are presented elsewhere in this report).

As many of the students entered the program with few functional classroom skills the teachers attempted to avoid the use of verbal directions that might be too long, too complex or contain words to which the students had not yet learned to respond. Thus a series of precise verbal directions were devised (e.g., "Touch (object)") and employed throughout the instructional program.

While the procedures employed did not allow for an exact comparison of performance on the two and three-choice tasks, with some Ss the two-choice task did appear to be superior. These children (#1, #2, #5, #6, #8, & #14) did not progress well during initial instruction on the first set of three objects (truck-doll-book). Thus, Set I was reduced to subsets of 2 objects (truck-doll; doll-book; book-truck) and the same teaching procedure was utilized in this modified two-choice situation. Reducing the number of objects in the array displayed before S had the effect of both (1) reducing the number of choices available to S and (2) simplifying the scanning or observing responses required to discern the correct object. Again the present program cannot separate these two factors, however, the Ss poor scanning appeared to be the more important factor. Informal observations by Ts indicated that some Ss appeared to touch the first object their eyes contacted. This failure to systematically observe all the objects in the array and then choose the correct one may have accounted for the poorer progress with three-choice situations.

Receptive language training was one of the first instructional programs introduced since it was considered to be crucial for the development of other more complex skills. The ability to respond differentially to the teacher's speech is a component of nearly every instructional program. In addition, early training in receptive language appears to facilitate later articulation of those same words. Mann and Baer (1971) found that:

> "exposure to words that have stimulus control over a subject's non-verbal behavior can facilitate later articulation of those same words."

The same authors conclude:

> "The present paper supports the conslusion of Winitz and Preisler (1965) and Pimsleur (1963) that discrimination training can be a functional antecedent to sound production. The present research also extends their findings further by suggesting that articulation not only of single sounds but of chains of sounds (i.e., words) can be facilitated by the proper exposure to language."

The receptive language program was concise and specific enough to be readily transferred to a home teaching situation. Parents could quickly learn the procedure and provide a short teaching session at home each evening. These teaching sessions were employed with some students to demonstrate effective teaching procedures as well as the progress of the students to the parents. Additionally, such home sessions served as reviews for receptive language skills already acquired by the students.

While this program may initially appear to be somewhat circumscribed and rigid in its format, it has been demonstrated to be an effective instructional vehicle for severely handicapped students. The authors are in agreement with Guess, Rutherford, Smith and Ensminger (1970) when they state:

> "First, and most obvious, is the fact that planning effective language training programs for severely retarded children is not an easy endeavor. For this type of child it is not enough just to bombard him with a wide variety of materials and hope that somehow he will appropriately respond to them. This was initially tried in the low level classes. It became apparent, however, that these children lacked the necessary language skills to enable them to generalize what little knowledge they had to a heterogeneous array of psycholinguistic areas. On the contrary, it was necessary to confine the program to a delimited number of deficit areas, and plan systematic lessons aimed specifically at the remediation of these areas."

Figure 1

Receptive Language Skills

(S #14)

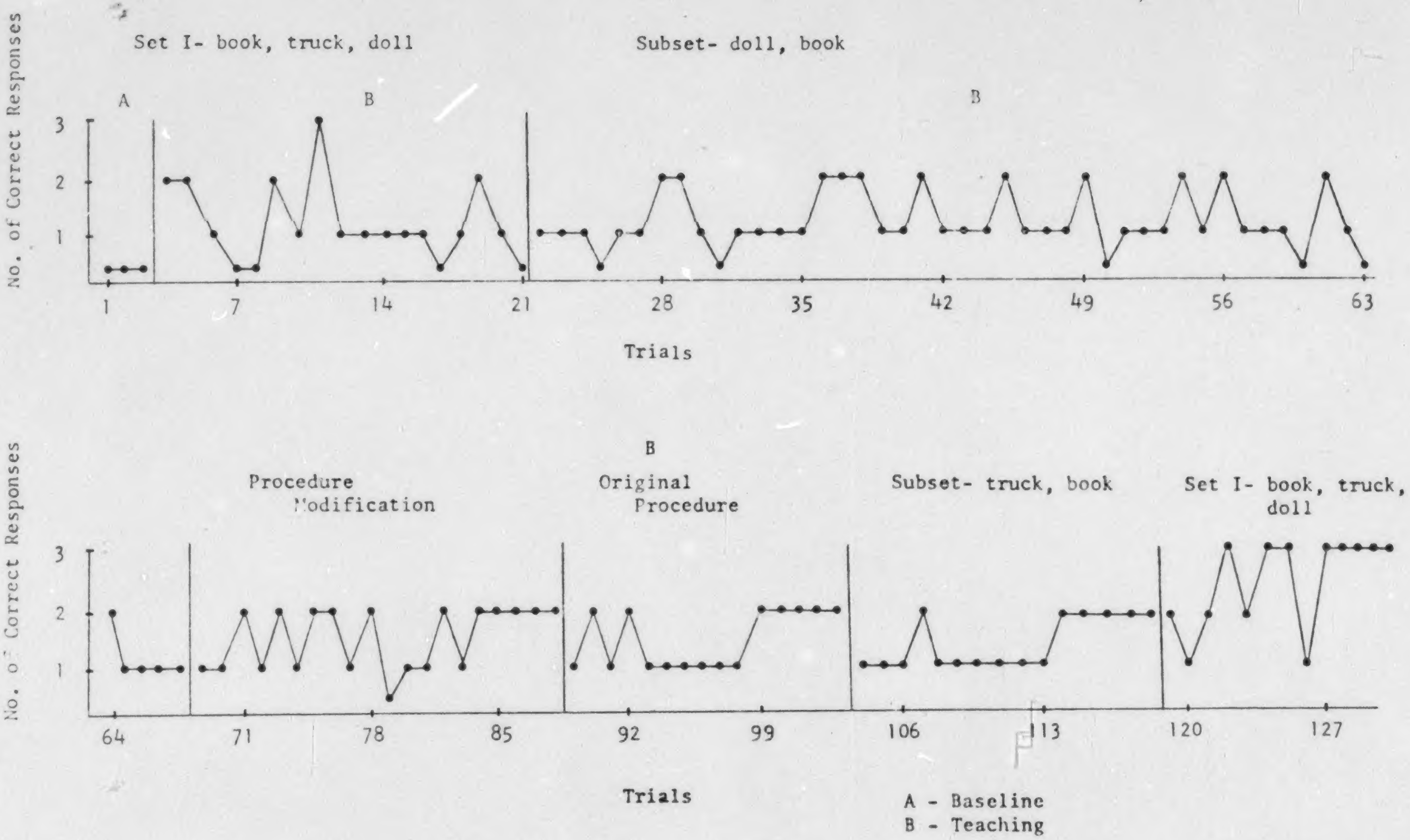


FIGURE 2
Receptive Language Skills
(S #14)

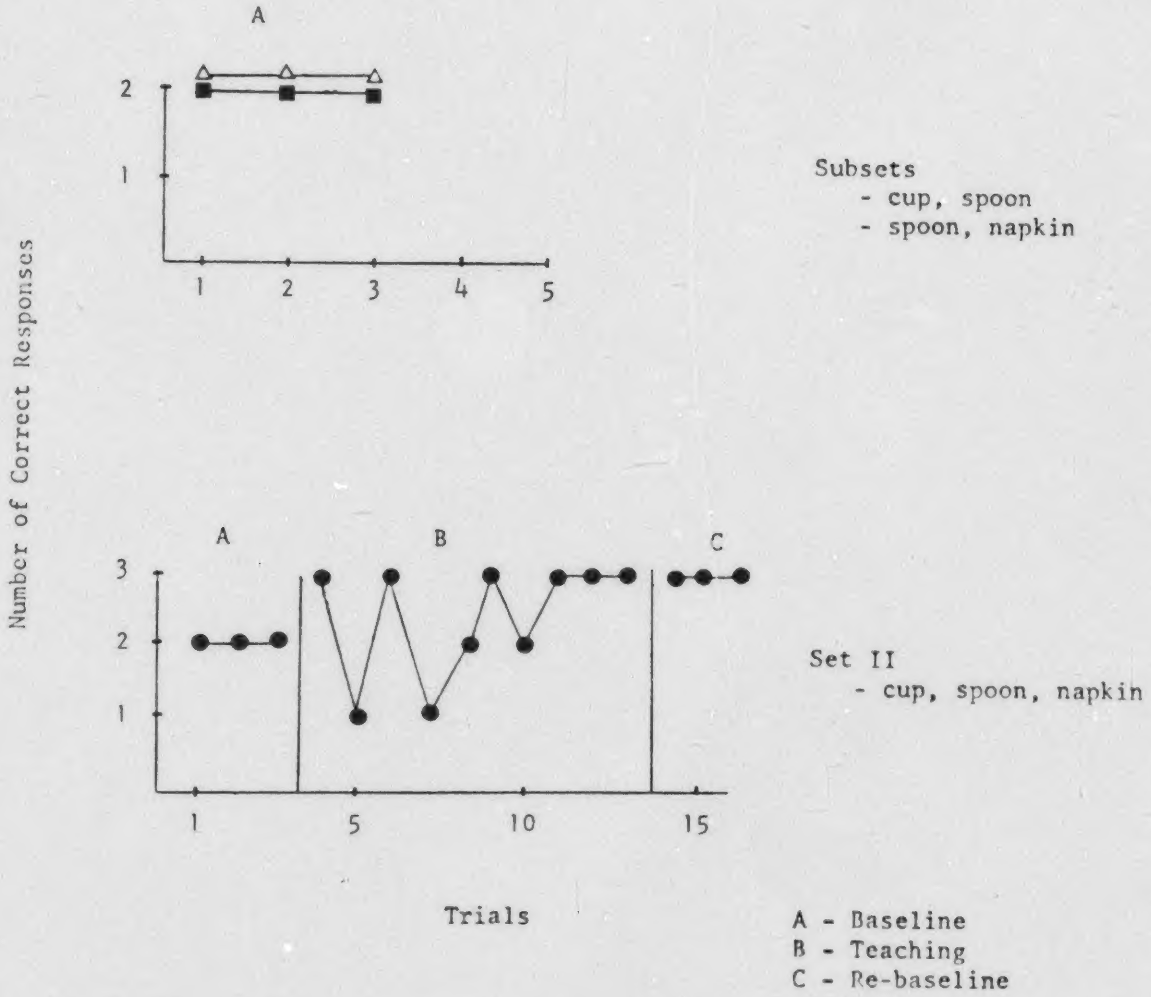


FIGURE 3

Receptive Language Skills

(S #14)

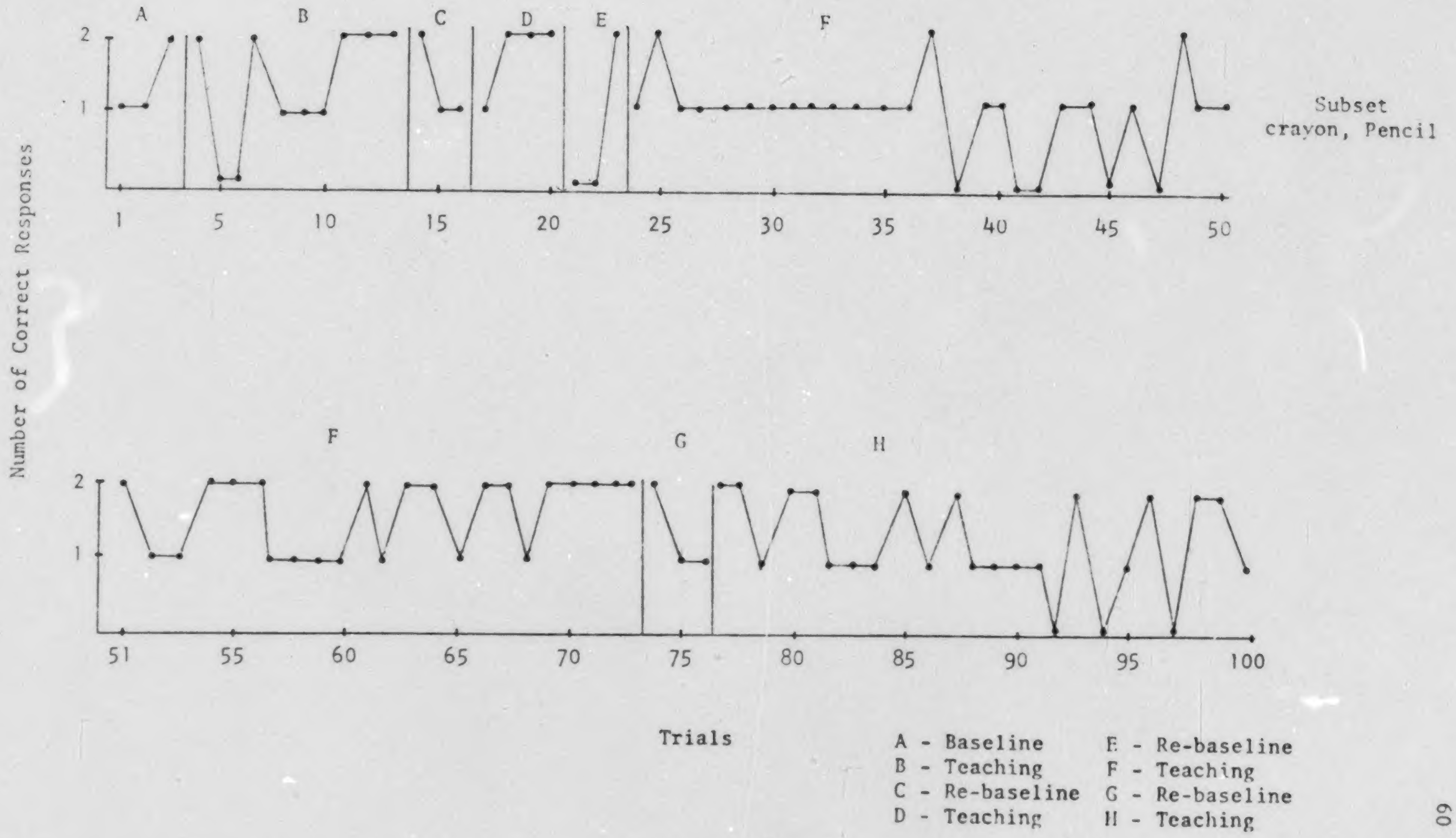
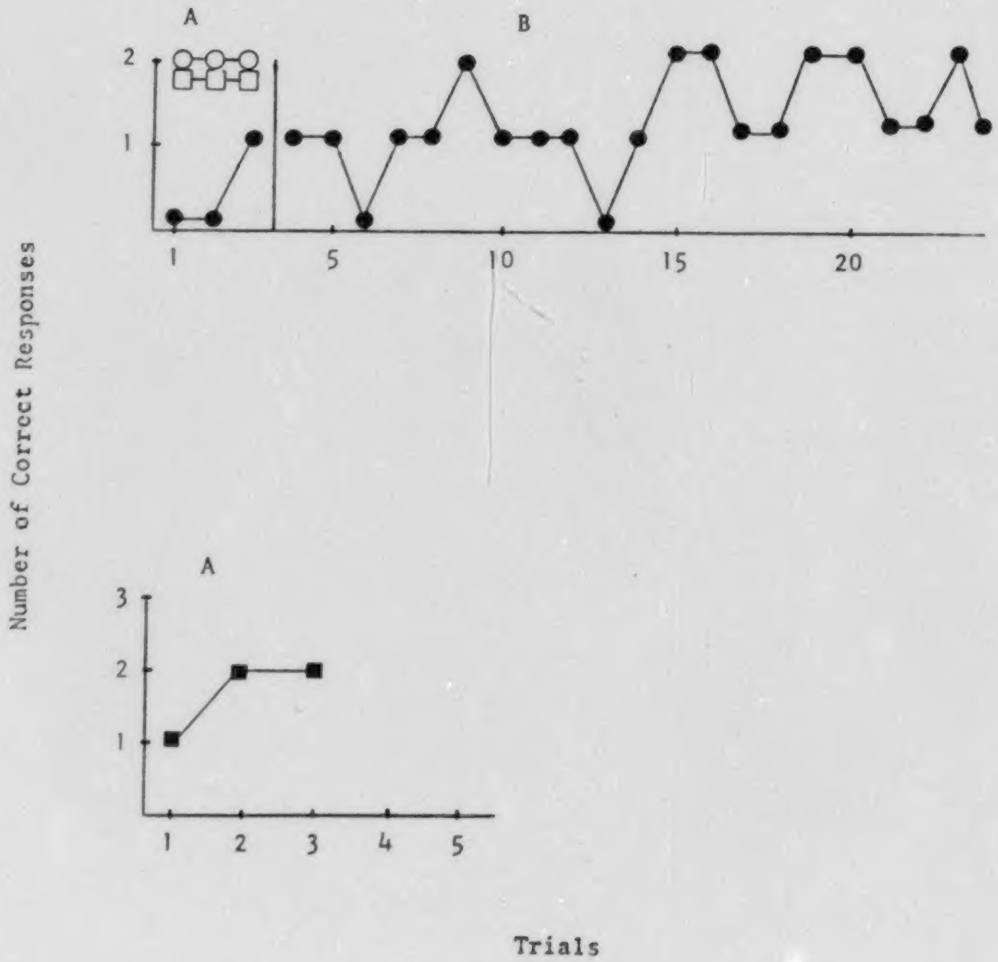


FIGURE 4

Receptive Language Skills

(S 14)



Subsets

- paper towel, soap
- soap, toothbrush
- paper towel, toothbrush

Set III

- paper towel, soap, toothbrush

A - Baseline
B - Teaching

FIGURE 5

Receptive Language Skills

(S #5)

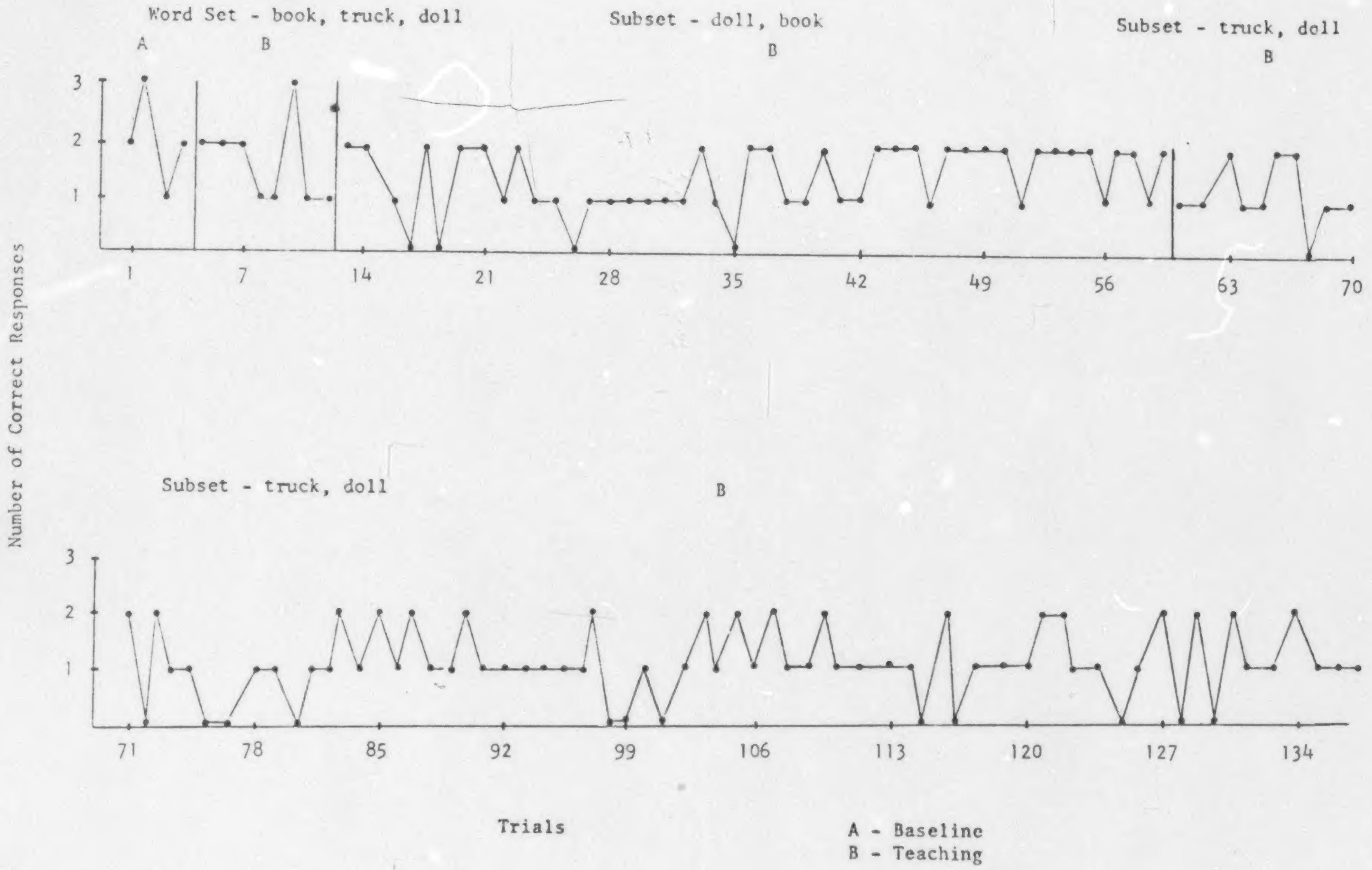


FIGURE 5 (cont.)
Receptive Language Skills
(S #5)

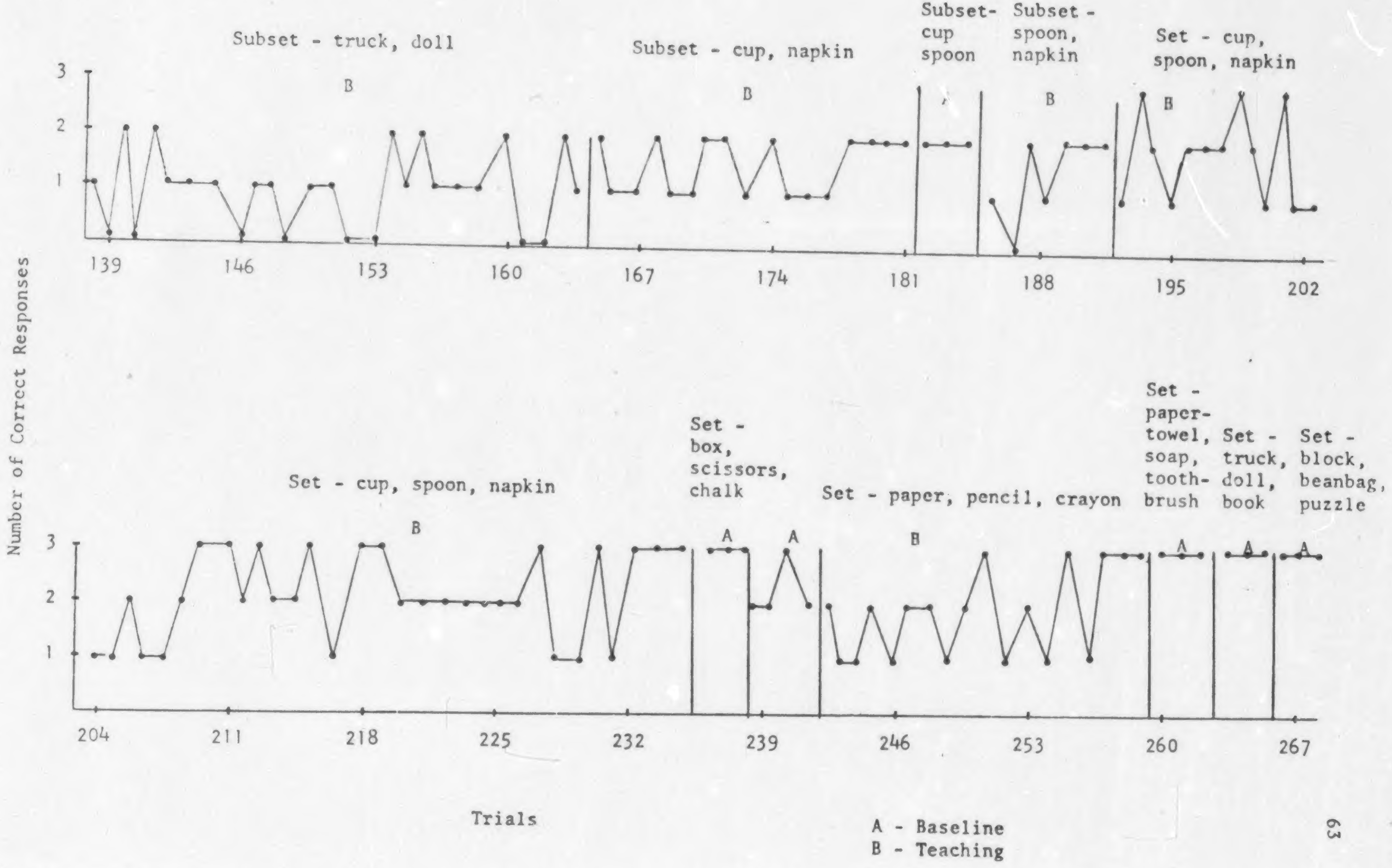


FIGURE 6

Receptive Language Skills

(S #5)

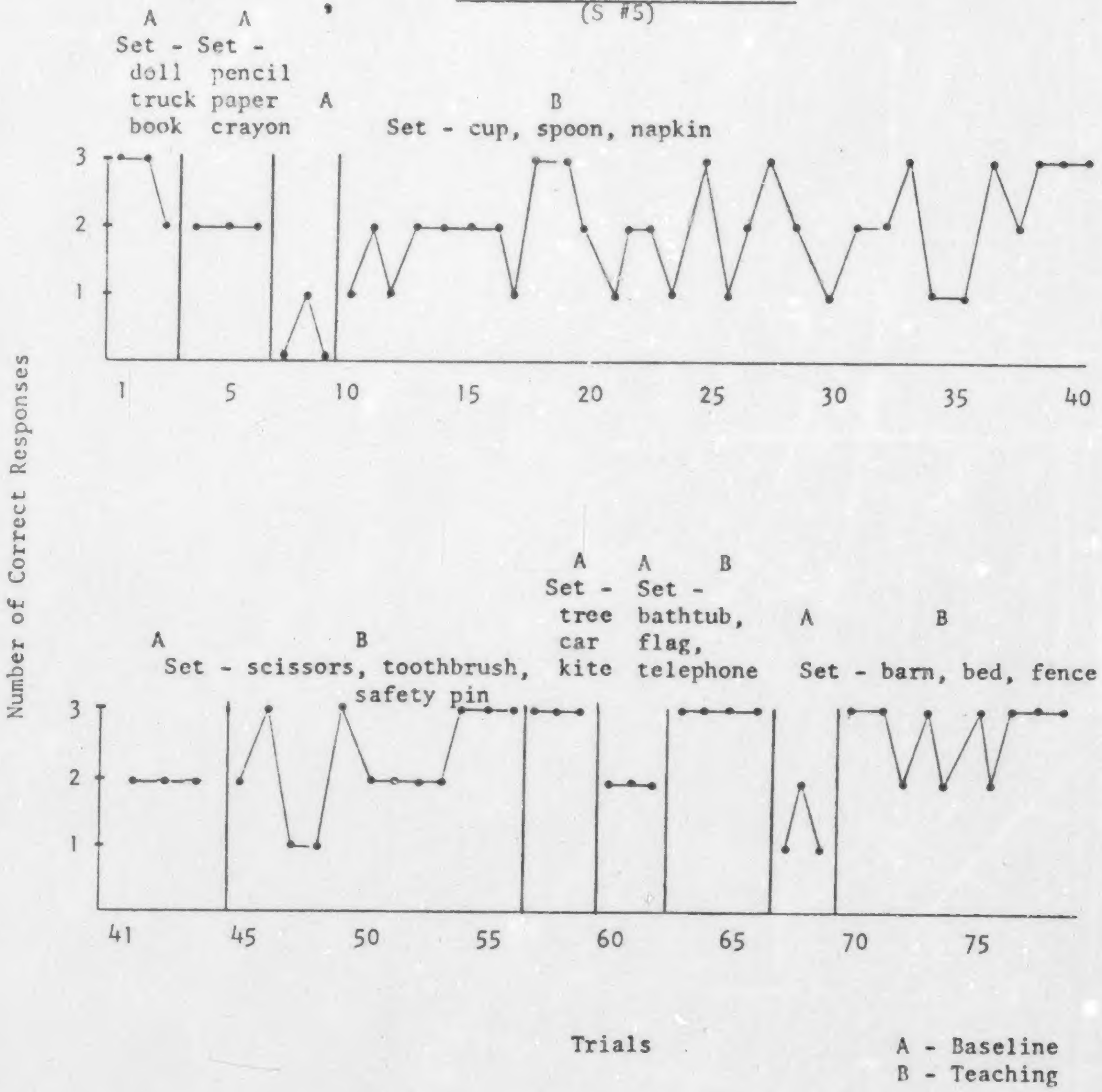
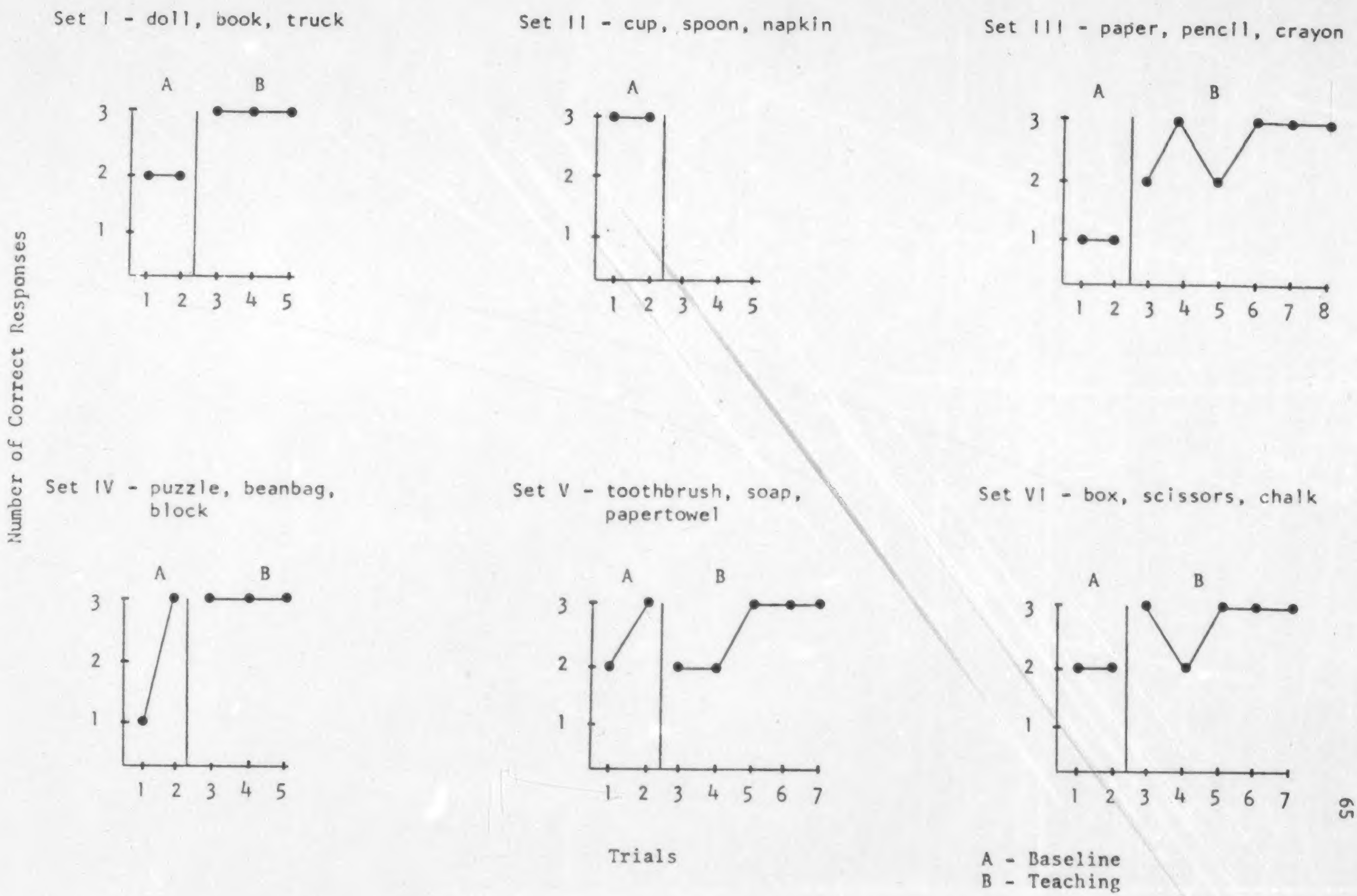


FIGURE 7
Receptive Language Skills
(S #9)



Set I - doll, book, truck

Set II - cup, spoon, napkin

Set III - paper, pencil, crayon

Set IV - puzzle, beanbag, block

Set V - toothbrush, soap, papertowel

Set VI - box, scissors, chalk

A - Baseline
B - Teaching

DATA SHEET
RECEPTIVE LANGUAGE PROGRAM

Date: ______ Set: I Cue: "Touch (object)"

Name	Trial	book	doll	truck	No. Correct
Subject 1	1	P*	M**	+	1
	2	M	+	M	1
	3	+	+	+	3

Date: ______ Set: II Cue: "Touch (object)"

Name	Trial	cup	spoon	napkin	No. Correct
Subject 2	17	M	+	M	1
	18	M	M	+	1
	19	M	+	M	1

Date: ______ Set: XI Cue: "Touch (picture)"

Name	Trial	tree	car	kite	No. Correct
Subject 3	12	M	+	M	1
	13	M	+	+	2
	14	M	+	+	2

Date: ______ Set: ______ Cue: ______

Name	Trial				No. Correct

Date: ______ Set: ______ Cue: ______

Name	Trial				No. Correct

*P - touching response of S obtained by priming
**M - touching response of S obtained by modeling

BEST COPY AVAILABLE

Expressive Language Program

The students comprising both Classrooms A and B displayed diverse levels of language skills. Within these levels some students (2, 5, 6 and 8) manifested almost no production of articulate sounds, limited physical gestures, and slow progress in the verbal direction and receptive language programs. Other students (9 and 11) frequently produced 2 and 3 word utterances, used extensive physical gestures and rapidly progressed through both the verbal direction and receptive language programs. Attempts were made to involve all students in programs designed to teach functional expressive language skills. However, these programs were generally individually designed and therefore varied widely. Some of the programs utilized are reported in this paper.

Program 1 - Teaching Imitation of Sounds

This program was designed for use with Ss (1, 2, 5, 6, 7, 8 and 14) who displayed the lowest level of expressive language functioning. Its purpose was to teach these Ss to correctly imitate sounds or words demonstrated by T. Initially Ss were asked to imitate simple vowel and consonant sounds (e.g., (a) father, (o) food, (b) ball, (m) ma). As imitations of these sounds improved, imitation of more complex blends of sounds and eventually words was required of Ss. The procedures utilized in Program 1 have been described elsewhere (York, Brown, Yoder & Scheerenberger, 1972) and therefore are not presented in this report.

Program 2 - Teaching Object and Picture Labeling

Ss in both Classrooms A and B who displayed good verbal imitation of words modeled by T (3, 4, 9, 10, 11, 12 and 13) were subsequently involved in the labeling of objects and pictures. Initially Ss were tested (baseline conditions) on their ability to verbally label objects and pictures. (A sample vocabulary list and the results of 2 Ss follow this program). From the baseline measures obtained on this vocabulary list, the teachers then decided whether students needed additional training in picture labeling or whether students should be involved in more sophisticated tasks such as labeling actions or the relative location of objects in space (i.e., block on box, block under box).

The baseline and teaching procedures utilized to teach the labeling of objects and pictures were essentially the same as described in the receptive language skills program. The only exceptions were (1) that verbal instead of touching responses were required and (2) the verbal direction employed by T was changed from, "S_1, touch (object)", to "S_1, what is this?" The outline of a picture labeling program used with Ss (3, 4, 12 and 13) follows.

Picture Labeling

Students (Ss):

Two Ss (3 and 4) from Classroom A and two Ss (12 and 13) from Classroom B were involved in the program. Instruction was conducted at a small table (See room diagrams in Appendix B), with one teacher (T) to 2 Ss.

Materials:

Ten pictures were selected from the picture vocabulary list which both Ss had labeled incorrectly or failed to label on the two trial baseline (list follows program). Subsequently, the ten pictures were divided into two sets, with five pictures in each set. The pictures used were from the Peabody Language Development Kit - Level P and are listed below:

Classroom A

Set I
pear
pineapple
ruler
bee
lamp

Set II
mittens
watermelon
worm
brush
barn

Classroom B

Set I
apron
glove
rake
orange
butterfly

Set II
ruler
pan
lock
iron
potato

Instructional Sequence:

Step I: Baseline measures were obtained on each Ss initial ability to label the ten pictures in Sets I and II. (2 trial baseline)

Step II: S_4 was taught to label the pictures of Set I and S_3 was taught to label the pictures of Set II in response to T's verbal direction, "S, What is this?" Criterion was set at correct responding to each of the five pictures in a set on three consecutive trials or a total of 15 consecutive correct responses.

Step III: Re-baseline measures were obtained on each Ss ability to label the pictures in Set I and Set II.

Step IV: S_4 was taught to label the pictures of Set II and S_3 was taught to label the pictures of Set I. Criterion was again set at errorless responding on three consecutive trials.

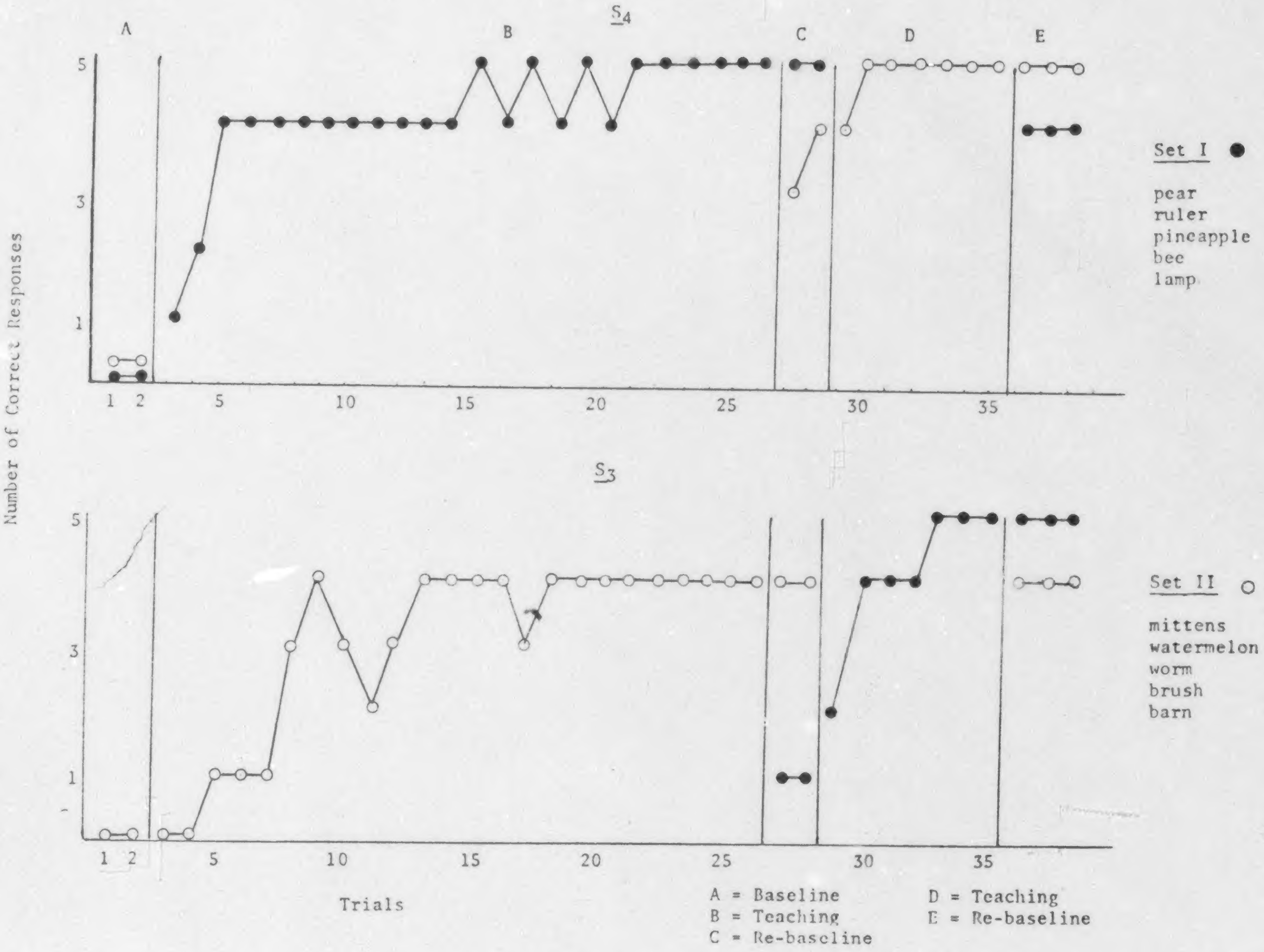
Step V: Re-baseline measures obtained on each Ss ability to label the pictures in Set I and Set II.

Results:

All four Ss successfully completed the program. In order to communicate the performance pattern of Ss, the performance of S_3 and S_4 will be presented graphically. It can be discerned from Figure 1 that S_4 made 0 of a possible 5 correct responses on Set II on the initial two trial baseline (trials 1, 2). Instruction was initiated on Set I and S_4 reached criterion after 21 teaching

FIGURE 1

Picture Labeling



BEST COPY AVAILABLE

trials (trials 3-23). S_4 was instructed on trials 24-26 only because the teacher was awaiting criterion performance by S_3 on Set II. During the re-baseline (second baseline) period (trials 27, 28) S_4 maintained errorless responding on Set I and displayed improved performance on Set II, making 7 of a possible 10 correct responses. Subsequently, only 4 teaching trials were required for S_4 to reach criterion on Set II. Again S_4 was exposed to 3 extra teaching trials while S_3 reached criterion on Set I. During re-baseline measurement (third baseline), S_4 maintained errorless responding on both Sets I and II (trials 36, 37 and 38).

As can be discerned from Figure 1, S_3 also made 0 of a possible 5 correct responses on both Sets I and II during the initial baseline period (trials 1, 2). After 24 teaching trials, S_3 had still not reached criterion on Set II. This appeared to be the result of S_3's consistent response to the picture of a brush with a verbalization that *T* could not understand. Therefore, *T* decided to terminate instruction on Set II with S_3 making 4 correct responses and continued with the rest of the program. Re-baseline measures resulted in S_3 correctly labeling 8 of a possible 10 pictures in Set II (both errors involved the picture of the brush) and 2 of 10 possible pictures in Set I (trials 27, 28). Instruction was then initiated on Set I and S_3 reached criterion after 7 teaching trials. During the re-baseline (third baseline) period (trials 36, 37, 38) S_3 maintained errorless responding on Set I and made 12 of a possible 15 correct responses on Set II (all 3 errors involved the picture of the brush).

Discussion:

It was the teachers' projection that some students could benefit from merely being in an instructional setting with other students. That is, a student could acquire certain skills while watching another student being instructed on the task and without receiving direct instruction on that task himself. It is apparent from the performance of $\underline{S}_4$ that this did in fact occur. $\underline{S}_4$ had *not* received direct instruction on Set II prior to the second baseline period, however, his performance on Set II increased dramatically from 0 correct responses on the initial baseline trials to 7 correct responses (of a possible 10) during the re-baseline (second baseline) condition. It is hypothesized that $\underline{S}_4$ had acquired the correct responses to Set II while observing $\underline{S}_3$ being instructed on that set. It should be noted that $\underline{S}_3$ did not show the dramatic increase in correct responding on the tasks required of him. However, the number of correct responses did increase slightly. Nevertheless, the performance pattern of $\underline{S}_4$ can be an indication to the teacher that a student like $\underline{S}_4$ may not need direct instruction on all tasks the teacher feels should be acquired. In fact, it was noted by the teacher of $\underline{S}_4$ that throughout the school year, $\underline{S}_4$ increased his vocabulary tremendously by imitating adult language in the room. One might then assume that by providing a good language model in $\underline{S}_4$'s environment, he may acquire many language skills without direct instruction. Instead, direct instructional time may be utilized more efficiently by presenting more complex tasks where incidental learning is unlikely.

BEST COPY AVAILABLE

Program 3 - Labeling Action Pictures (Verbs)

Those students from both Classrooms A and B who initially labeled a large number of objects and pictures or had acquired these labels in Program 2, were subsequently taught to label action pictures. An outline of this program is presented below:

Phase I: $\underline{S}$s are to verbally label the physical action depicted in a picture with the appropriate verb label.

The teacher would place a picture in front of an *S* and say "What is (*boy* or *girl*) doing?"

Actions depicted in pictures	*Desired Student Response
1) Girl eating	1) "eating"
2) Boy walking	2) "walking"
3) Girl sleeping	3) "sleeping"
4) Boy sitting	4) "sitting"
5) Boy running	5) "running"

*An unconjugated form of the verb was also an acceptable response (e.g. "eat", "walk").

The second phase of this program attempted to combine the basic language components already taught into a rudimentary syntactic construction (noun - verb).

Phase II: *Ss* are to verbally label the physical action depicted in a picture with the appropriate subject and verb labels.

The teacher would place a picture in front of an *S* and say "What is (*boy* or *girl*) doing?"

Actions depicted in pictures	*Desired Student Response
1) Girl eating	1) "Girl eating"
2) Boy walking	2) "Boy walking"
3) Girl sleeping	3) "Girl sleeping"
4) Boy sitting	4) "Boy sitting"
5) Boy running	5) "Boy running"

*An unconjugated form of the verb was also acceptable response (e.g. "Girl eat")

Program 4 - Placing and Naming the Relative Location of Objects in Space (Prepositions)

This program was taught concurrently with Program 3 and several other language programs. The *Ss* (3, 4, 9, 11, 12 and 13) who were involved came from both Classrooms A and B. It should be noted that the program outlined below had both a receptive (Phase I) and expressive (Phase II) language component.

Phase I: *Ss* were to place a block in the correct location in relation to a wooden box when given a verbal cue by the teacher "Put the block (*on, in, under*) the box."

Teacher Cue	*Student Response*
1) "Put the block in the box."	1) *S* would lift the lid of the box and place the block inside the box.
2) "Put the block on the box."	2) *S* would put the block on the closed lid of the box.
3) "Put the block under the block."	3) *S* would place the block underneath the bottom of the box (box was supported by 2" legs).

Phase II: *Ss* were to verbally report the location of the block, in relation to a wooden box, (with the appropriate prepositional label), when asked "Where is the block?"

Teacher Cue	*Student Response*
1) *T* would place the block in the box and say "Where is the block?"	1) "in"
2) *T* would place the block on the box and say "Where is the block?"	2) "on"
3) *T* would place the block under the box and say "Where is the block?"	3) "under"

+ Verbal approximation of word recognizable to T

VOCABULARY LIST

	S_4		S_3	
A				
airplane	+	+	-	-
alligator	+	+	-	-
apple	+	+	-	-
apron	-	-	-	-
arm	+	+	-	-
B				
bacon	-	-	-	-
banana	+	+	-	-
broom	"mop"	"mop"	-	-
boat	+	"ip"	"babo"	"babo"
bike	+	+	"ba"	-
bus	+	+	"bu"	"bubu"
butterfly	+	+	-	-
bird	+	-	-	-
bunny	+	+	-	-
beans	-	-	-	-
bee	"butterfly"	"butterfly"	"boy"	-
bat (animal)	-	-	-	-
bear	+	+	"kitty"	"kitty"
bread	-	+	"bre"	-
balloon	+	+		
belt	+	+	-	+
button	+	+	-	-
bell				
bathtub	+	+	"bathroom"	"bathroom"
butter	+	+	+	+
brush	"comb"	"comb"	"hair"	"hair"
bat (toy)	"ball"	"ball"	-	-
ball	+	+	+	+
bed	+	+	"ed"	-
barn	"cow"	"cow"	"door"	-
C				
camel	-	-	"cah"	-
couch	+	+	-	-
cap	"hat"	"hat"	-	"ha a"
cereal	-	+	-	-
coffee pot	"pot"	"pot"	"co of"	-
clown	+	+	-	-
cow	"moo"	+	-	-
coat	+	+	-	"shirt"
comb	+	+	"hair"	"hair"
carrots	+	+	-	-
corn	+	+	-	-
cake	+	+	+	+
cowboy	"man"	"owbody"	-	-
crackers	+	+	-	"ee"
cheese	+	+	-	"ee"
cloudy	+	+	-	-
car	+	+	+	+
chair	+	+	+	+
calendar	-	-	-	-

	$\underline{S_4}$		$\underline{S_3}$	
D				
dollar	"money"	"money"	-	-
drum	+	+		
deer	+	+	+	+
dentist	"doctor"	"doctor"	-	-
dress	-	-	-	-
donkey	"heehaw"	"heehaw"	-	-
dime	"penny"	"money"	-	-
E				
elephant	+	+	-	-
egg beater	-	-	-	-
eggs	+	+	-	-
eye	+	+	-	-
elbow	+	+	-	-
eraser	"soap"	"soap"	-	-
F				
frog	+	+	"turtle"	"toad"
fox	-	-	-	-
feather	-	-	"fe"	"fe"
firetruck	+	+	"fire"	-
fireman	"police"	+	-	-
finger	+	+	-	"inger"
foot				
fork	+	+		
fish	+	+	-	-
flag	+	+	+	-
flower	+	+	+	+
fence	-	-	-	+
G				
glasses	-	-	"ga"	"ge"
giraffe	+	+	"gira"	-
gloves	-	-	-	-
glass	"cup"	"cup"	"ga"	-
goat	-	+	"lamb"	-
gum	+	+	-	-
H				
helicopter	+	+	-	-
horse	+	+	-	-
hand	+	+	"ha"	-
hamburger	"cookie"	+	"bur"	-
hot dog	+	+	"sand"	-
hat	-	+	"ha"	-
horn	+	+	-	-
hanger	+	+	"hang"	"hang"

	$\underline{S}_4$		$\underline{S}_3$	
I				
ice cream cone	+	+	-	-
iron	+	-	-	-
ironing board	-	-	"ta"	-
Indian	+	+	-	-
J				
jello	+	"pie"	-	-
K				
ketchup	+	+	"ke"	"ke"
knee	+	+	-	+
knife	+	+	-	+
kittens	"cats"	"cats"	"ke e"	"ke ka"
key	+	+	-	+
kleenex	+	+	-	+
kite	+	+	-	-
L				
lion	-	-	"kitty"	"kitty"
lamp	"lights"	"lights"	-	-
leg	+	+	+	-
lemon	+	+	-	-
M				
mouth	-	-	-	-
mailman	+	+	-	-
milk	+	+		
mittens	-	-	-	-
monkey	+	+	-	-
moon	"banana"	"banana"	-	-
			+	-
N				
Nurse	"doctor"	"doctor"	-	-
necklace	-	-	-	-
nickel	+	+	"penny"	-
O				
owl	+	+	-	-
orange	-	-	-	-
orange juice	"milk"	"milk"	-	-

	S_4		S_3	
P				
penny	"money"	"money"	+	-
piano	+	-		
pig	+	+	-	-
penguin	-	-	--	-
peacock	+	++	-	-
policeman	"police"	"man"	-	-
plate	+	+	-	-
pants	+	-	+	-
purse	-	-	+	-
pumpkin	+	+	-	-
puppy	"dog"	"dog"	-	-
polarbear	"bear"	"bear"	-	-
pineapple	-	-	-	-
pear	-	-	-	-
pin	-	-	-	-
potato chips	"cookie"	"frito"	-	-
peach	"lemon"	"lemon"	-	-
pop	"coke"	"coke"	"soda"	"soda"
pail	"cup"	"cup"	-	-
pan	+	+	-	-
pot	+	+	-	-
popcorn	+	+	-	-
Q				
quarter	"money"	"nickel"	-	-
R				
ruler	-	-	-	-
raincoat	"coat"	"coat"	"coat"	"coat"
rooster	"chicken"	"chicken"	-	"roo"
refrigerator	+	+	"free"	-
record player	-	-	-	-
S				
sewing machine	-	-	-	-
slide	-	-		
sheep	+	+	-	-
squirrel	+	+	"quir"	-
seal	+	+	-	-
shorts	"pants"	-	-	-
swimming suit	-	-	-	-
spider	+	+	-	-
shoe	"boot"	"boot"	+	+
stove	-	-	+	-
sink	-	-	-	-
shirt	"coat"	"coat"	-	"coat"
stamp	+	+	+	"face"
sun	+	+	+	-
skirt	+	+	-	-
swing	-	-	+	+
soup	+	+	-	-
sandwich	"bread"	"bread"	"san"	-

	S_4		S_3	
T				
thumb	+	+	-	-
toilet	"potty"	"potty"	+	+
tiger	-	+	"kitty"	-
turtle	+	+	"tur"	"tur"
toast	"pancake"	"butter"	+	+
tea pot	"tea"	"tea"	-	-
turkey	"peacock"	"peacock"	-	"tur"
towel	+	+	-	-
table	+	+	"ta"	+
television	-	+	"TV"	"TV"
telephone	+	+	"phone"	"phone"
toothpaste	+	+	+	"paste"
tree	+	+	+	+
U-V				
umbrella	+	+	-	-
vacuum cleaner	+	+	-	-
W				
watermelon	-	-	-	-
wagon	+	+		
whale	-	-	-	-
watch	"clock"	"clock"	+	+
worm	"snake"	"snake"	-	-
X-Y-Z				
zebra	+	+	-	-

Initial Sight Word Reading Program

This program was designed and implemented in an attempt to develop several basic sight word reading skills. For reasons stated in papers previously produced by the Badger staff a "whole word" approach to reading was adopted. The skills developed in this program are considered prerequisites for the successful reading of chart stories. Thus, the objects and words used here were selected because they could be incorporated into chart stories rather easily.

In general the program was concerned with teaching the following basic skills:

1) Verbally labeling objects;
2) Verbally labeling pictures of objects;
3) Verbally labeling different sized objects;
4) Verbally labeling printed words that represented the relative size of objects.

As can be surmised from perusal of other programs in this report, the skills under instruction here cannot be separated from skills under instruction in other programs that were conducted concomitantly. Thus, the performance of the students as observed in this program was probably influenced by training received in other programs. On one hand one might consider this lack of exclusiveness contaminating in that it is not possible to determine the specific effects of the manipulations on the behavior of the students. On the other hand, the performance of many students across programs offers at least anecdotal support for transfer of training skills which is certainly desirable.

Finally, the program was designed so that training on one task might facilitate acquisition or performance of the skills required of other tasks. This endeavor should be kept in mind when several dramatic changes in responding without direct training are encountered.

BEST COPY AVAILABLE

Students and Materials

Students (Ss). Five Ss (1, 2, 9, 11, 12) from classes A and B were involved in this program. Each S was allowed to progress through the components at his individual pace. The teaching arrangement consisted of small groups of one T to 1, 2, or 3 Ss.

Materials. Conduction of the teaching program involved the use of the following teacher made materials:

1) Six 4 1/2" x 6" pieces of manilla tagboard with objects drawn on them;
2) Two construction paper circles, 2 1/2" and 9" in diameter respectively;
3) Eight 3" x 9" pieces of manilla tagboard each containing a printed sight word;
4) Data sheets which provided space for date, step, cue, name, trial number, and total number of correct responses, allowing for a continuous recording of all responses (see example data sheet at the end of this report).

Task Analysis

The following depicts the object drawings and corresponding sight words selected for teaching in Phases I and II as well as a task analysis.

Phase I - Labeling the sight words ball, balloon and fish.

Step 1 - Labeling of object drawings.

Set I - Drawings of the following:
ball
fish
balloon

Step 2 - Labeling object sight words with visual cues.

Set II - Drawings and printed words representing the following:
ball
fish
balloon

Step 3 - Labeling of object sight words.

Set III - The following object sight words:
ball
fish
balloon

BEST COPY AVAILABLE

Phase II - Labeling the sight words house, bird and apple.

Steps IV, V, and VI of Phase II are identical to Steps I, II, and III of Phase I, with the exception that the drawings and words representing a house, a bird and an apple were substituted for drawings and words representing a fish, a ball and a balloon.

Phase III - Labeling of sight words representing relative size.

Step VII - Labeling of the relative size of objects.

Set VII included a big circle and a little circle.

Step VIII - Labeling of size sight words with a visual cue.

Set VIII included a big circle, a little circle and the corresponding sight words (big, little).

Step IX - Labeling of size sight words.

Set IX included the size sight words, big and little.

BEST COPY AVAILABLE

Teaching Procedures

Step 1 - Teaching the labeling of object drawings. Before sight words were introduced Ss were taught to verbally label the drawings of objects so the drawings could eventually be paired with printed sight words. Teaching was conducted as follows:

1) T placed on the table directly in front of S_1 an object drawing from Set 1 and said, "S_1, what is this?" If S_1 correctly labeled the drawing T smiled, said "Good, etc.", issued a consumable consequence, recorded a correct response (+), and presented a different object drawing from Set I to S_2, etc.

2) If S_1 made no response or made an incorrect response T said "No!", repeated the cue, "S_1, what is this?" and verbally modeled the correct response, "(label of object drawing)". T again repeated the cue, "S_1, what is this?" If S_1 correctly imitated the verbal model T smiled, said "Good, etc." (did not deliver a consumable consequence) recorded an "M_1" (first model) on the data sheet and presented a different object drawing from Set I to S_2, etc.

3) If S_1 made no response or did not correctly imitate the verbal model T said "No!", repeated the cue, "S_1, what is this, say (label of object drawing)." If S_1 responded correctly T provided only social consequences and recorded "M_2" (second model) on the data sheet. S_2 was given a different object drawing to label, etc.

4) If S_1 made no response or an incorrect response T said "No, this is a (label of object drawing)", recorded an incorrect response and teaching for this trial was terminated. S_2 was then given a different object drawing to label, etc.

5) Instruction continued on the object drawings until an individual S performed correctly in three consecutive trials, each trial consisting of one response to each object drawing without assistance from T.

Step 2 - Teaching the labeling of object sight words with visual cues. After Ss were taught to label the object drawings, the drawings were presented with their respective printed words in order to facilitate a transition between the object drawing and a printed word. Teaching was conducted as follows:

1) T placed the sight word with the respective object drawing above it on the table directly in front of S_1 and T positioned his index finger to the left of the sight word. T then said "S_1, what word is this?" If S_1 correctly labeled the sight word T smiled, said "Good, etc.", issued a consumable, recorded a correct response (+) and presented a different sight word and respective object drawing to S_2, etc.

2) If S_1 did not respond or did so incorrectly T said "No!", repeated the cue, "S_1, what word is this?", verbally modeled the correct response, "(object sight word)" and repeated the cue, "S_1, what word is this?" If S_1 correctly imitated the model, T smiled, said "Good, etc.", did not provide a consumable, recorded "M_1" on the data sheet and presented a different sight word and corresponding object drawing to S_2, etc.

3) If S_1 did not respond or incorrectly imitated the verbal model, T said "No!", repeated the cue, "S_1, what word is this?", then pointed to the object drawing with his index finger and said, "S_1, what is this?". S_1 then labeled the object drawing (a task learned in Step 1). T then returned his index finger to the sight word and repeated the cue, "S_1, what word is this?". If S_1 correctly labeled the sight word T provided S_1 with social consequences only and recorded "M_2" on the data sheet. S_2 was then presented with a different sight word and respective object drawing, etc.

4) Instruction was continued until an individual S performed correctly without assistance from T on three consecutive trials, each trial consisting of three responses.

Step 3 - Teaching the labeling of object sight words. When an individual S was taught to label the sight words with visual cues (object drawings), these cues were removed and the sight words were presented alone. Teaching was conducted as follows:

1) *T* placed the sight word on the table directly in front of S_1 and *T* positioned his index finger to the left of the sight word. *T* said "S_1, what word is this?". If S_1 correctly labeled the sight word, *T* smiled, said "Good, etc.", issued a consumable, recorded a correct response (+), and presented a different sight word to S_2, etc.

2) If S_1 made no response or responded incorrectly, *T* said "No!", repeated the cue, "S_1, what word is this?" and modeled the correct response, "(object sight word)". *T* then repeated the cue, "S_1, what word is this?". If S_1 correctly imitated the model *T* smiled, said "Good, etc.", did not issue a consumable consequence, recorded "M_1" on the data sheet, presented S_2 with a different object sight word, etc.

3) If S_1 did not respond or responded incorrectly *T* said "No!" repeated the cue, "S_1, what word is this?" and asked S_1 to verbally label the sight word, "S_1, say (object sight word)". If S_1 responded correctly *T* provided social consequences only, recorded "M_2" on the data sheet and presented S_2 with a different object sight word, etc.

4) If S_1 made no response or responded incorrectly, *T* said "No, this word is (label of object sight word)" recorded an incorrect response (-) and presented S_2 with a different sight word, etc.

5) Instruction was continued until an individual *S* performed correctly without assistance from *T* on three consecutive trials, each trial requiring three responses.

As stated above the object drawings and correlated sight words used in Steps IV, V, and VI were different than those used in Steps I, II, and III. However, the procedures used to teach correct responding in Steps IV, V, and VI were identical to those used in relation to Steps I, II, and III.

Step VII - Teaching the labeling of the relative size of objects. In the program (big and little) referred to in the mathematics section of this report *Ss* 9, 11, and 13 were taught to verbally report whether an object was big or little. Thus, teaching the labeling of big and little objects here was unnecessary. However, in our view the reader should be advised that if *Ss* were not taught to label big and little objects elsewhere, they would have been taught at this point in this program.

Step VIII - Teaching the labeling of size sight words with visual cues. This skill was taught using the procedures described in Steps II and V. The only major departure being the positioning of the visual cue. That is, when the sight word "big" was presented the "big" circle was placed directly above the word "big" and the "little" circle was placed to either the left or right of the "big" circle. When the word "little" was presented the "little" circle was placed directly above the word "little" and the "big" circle was placed to the left or right of the "little" circle. This was done because the size of an object is only relative to the size of the other object(s) around it. Consequently, *S* would need two objects to determine the relative size of one.

Step IX - Teaching the labeling of size sight words. The teaching procedures for this skill are identical to those described in Sets III and VI.

RESULTS

The general performance of the five *Ss* involved in this program at the end of the school year is presented in Table 1. However, only the performance of S_9 will be presented in detail as it appears that the performance of S_9 provides a reasonable presentation of the other *Ss* who completed the three phases of the program.

TABLE 1

	Phases								
	I			II			III		
				Steps					
Student	I	II	III	IV	V	VI	VII	VIII	IX
12	X*	X	X						
4				X	X	X			
9	X	X	X	X	X	X	X	X	X
11	X	X	X	X	X	X	X	X	X
13	X	X	X	X	X	X	X	X	X

* X = *S* reached criterion on a particular step.

As can be discerned from Table 1, $\underline{S}_{12}$ performed at criteria level in Phase I. It should be noted that based upon deficits in performance in other programs, instruction on the sight word program was terminated. That is, a priority decision was made by the teacher which resulted in the substitution of other programs for the sight word program. Subsequent to the removal of the alluded to deficits, instruction on the sight word program will be reinstituted.

As can be discerned from Table 1, $\underline{S}_{4}$ performed at criterion level in Phase II. It should be noted that $\underline{S}_{4}$ was a member of Class A, while the remaining $\underline{Ss}$ were members of Class B. $\underline{S}_{4}$ did perform at criterion level on three different object drawings and words but they were not the same objects and drawings as were used in Phase I of this program. Unfortunately, the school year ended before $\underline{S}_{4}$ could receive training on the Phase III tasks.

As can be discerned from Table 1, $\underline{Ss}$ 9, 11, and 13 performed at criterion level on the tasks required in Phases I, II, and III.

The performance of $\underline{S}_{9}$ is depicted graphically in Figure 1.

As can be discerned from Figure 1A, during the three baseline trials of Step 1 (labeling object drawings) $\underline{S}_{9}$ made 6 of a possible 9 correct responses. Only 4 teaching trials (trials 4-7) were required to secure criterion performance. Subsequent to criterion performance on Step 1, baselines of the skills required in Steps II and III were obtained.

Figure 1B represents the performance of $\underline{S}_{9}$ on the tasks required in Steps II and III. During the baseline period (trials 1-3) $\underline{S}_{9}$ made 5 of a possible 9 correct responses on Step II (labeling object sight words with visual cues) and no correct responses on Step III (labeling object sight words). Teaching trials on Set II were initiated at trial 4. Obviously, teaching was unnecessary (except for consequation) in that $\underline{S}_{9}$ reached criterion after three trials without a single error. Subsequently, performance on Step III was rebaselined with a resulting increase from 0 correct responses during trials 1-3 to 2 correct responses during trials 7-9. Factors that can account for the increase in performance without direct teaching at this point cannot be determined. However, in our view the fact that S$_9$ had the opportunity to observe other Ss receive instruction on the same task and that the training received on Step II resulted in the development of skills applicable to performance of the tasks of Step III seem tenable hypotheses.

At trial 10 teaching the labeling of the sight words without the visual cues was initiated. As can be discerned from Figure 1B (trials 10-13) S$_9$ made only 1 error before reaching criterion.

Figure 1C depicts that during the 3 baseline trials of Step IV (labeling object drawings) S$_9$ labeled the object drawing of the bird[1] "bluebird" on all trials, consequently making 6 of a possible 9 correct responses. Twenty-three teaching trials (trials 4-26) were necessary to teach S$_9$ to label the object drawing "bird" instead of "bluebird" at criterion level.

Figure 1D represents the performance of S$_9$ on the tasks required on Steps V and VI. During the baseline phase (trials 1-3) S$_9$ responded at the criterion level of 9 correct responses on Step V (labeling sight words with visual cues) and made no correct responses on Step VI (labeling object sight words). Subsequently instruction was initiated on Step VI. As depicted in Figure 1D, S$_9$ reached criterion level after 7 teaching trials (trials 4-10).

Figure 1E represents the performance of S$_9$ during Phase III.[2] Figure 1E (trials 1-3) depicts the performance of S$_9$ during the baseline period. It should be noted that baseline measures on Set IX were obtained before baseline measures on Set VIII. During the baseline period S$_9$ did not label any of the sight words (big/little) without the aid of the visual cues (object drawings). However, S$_9$ did perform at criterion level during the Set VIII baseline.

---

[1] In the object drawing the bird was yellow.

[2] Step VII was not taught in this program.

Subsequently, teaching was initiated at trial 4 on Set IX and other than the possibility of consequation effects, teaching was unnecessary. In our view it appears that S_9 paired the drawing with the sight words during the baseline of Set VIII and remembered the pairings when called upon to label the sight words without the visual cues during trials 4, 5, and 6.

Comments

In summary, the program as designed was relatively effective in that all students who received instruction acquired some new sight word skills. In our view the students who were taught the skills related to at least one set of sight words as well as the skills taught in related programs had in their repertoire a sufficient number of requisite skills to justify initial training in the reading of selected chart stories. The specific chart stories on which the students received training will be presented in the next program. However, before we leave this program the following points seem in order.

Instead of continually adding to the number of sight words in the program it was decided, in an attempt to foster generalization, to present and use the words in varied settings. The students were asked to label the words when they were printed on a chalkboard and when they were printed on lined paper. The students were also asked to perform such tasks as putting an X or a circle on a word in response to a verbal cue when three words were presented on a page; putting an X or a circle on two words that were the same in a three word set (eg. fish, ball, fish); and drawing a line that connected a word with a drawing of that word when one word and three drawings were presented on a page.

SAMPLE DATA SHEET

Sight Word Program

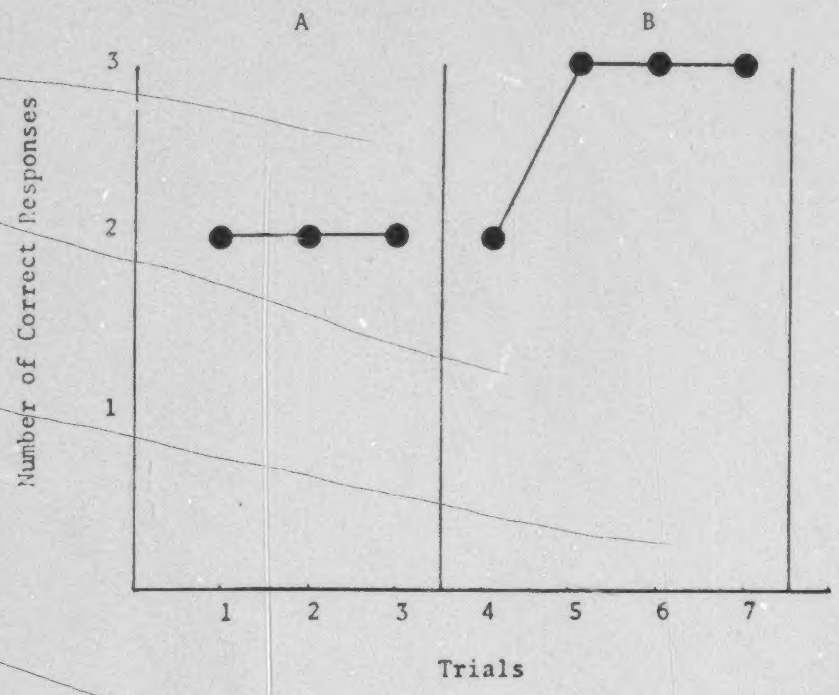
Date: ____________ Step: ____________ Cue: ________________

Name	Trial	house	apple	bird	Total Number Correct

FIGURE IA

Labeling of Object Drawings

S9



Step I

ball
fish
balloon

A = Baseline
B = Teaching

FIGURE IB

Labeling Sight Words

$\underline{S_9}$

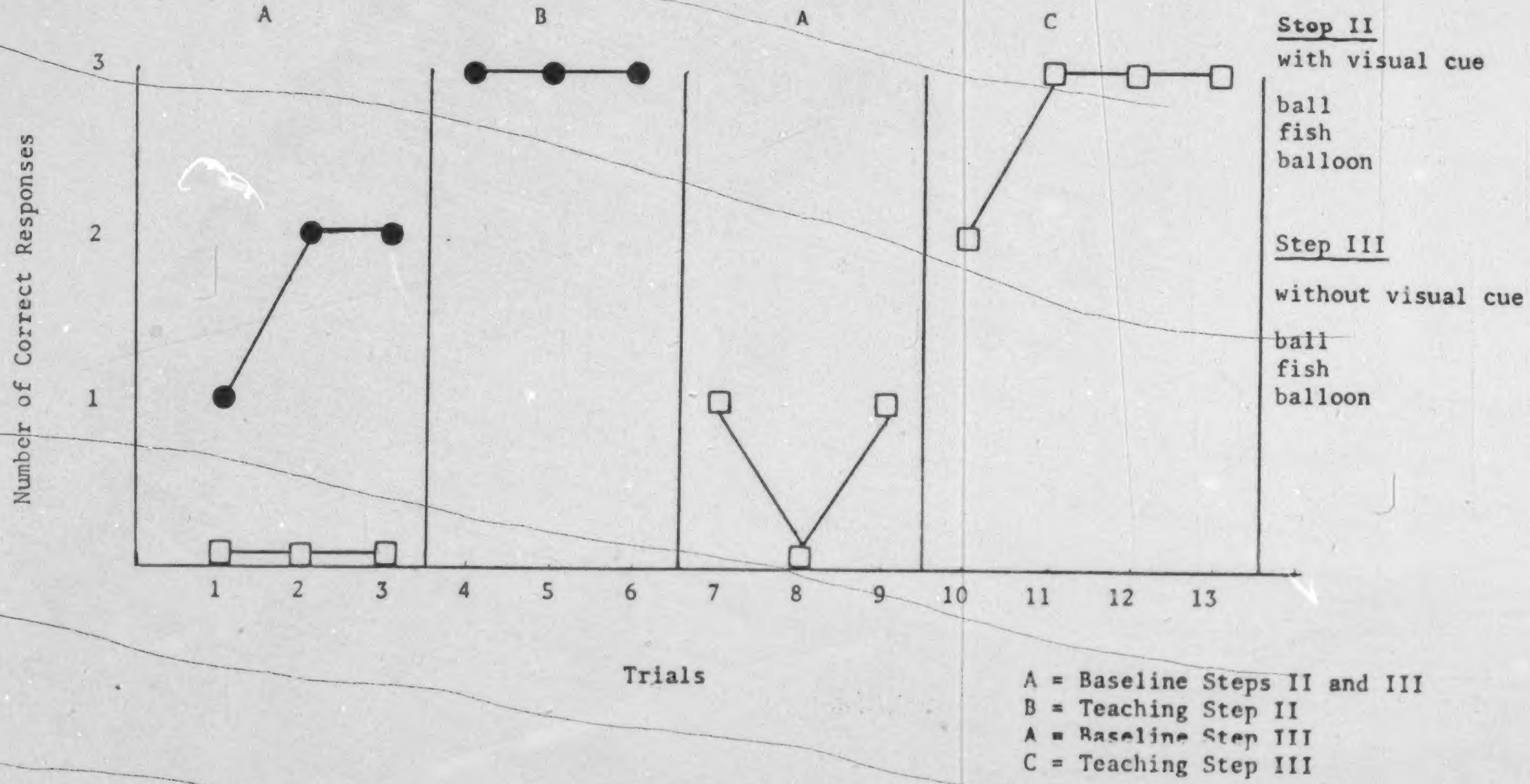
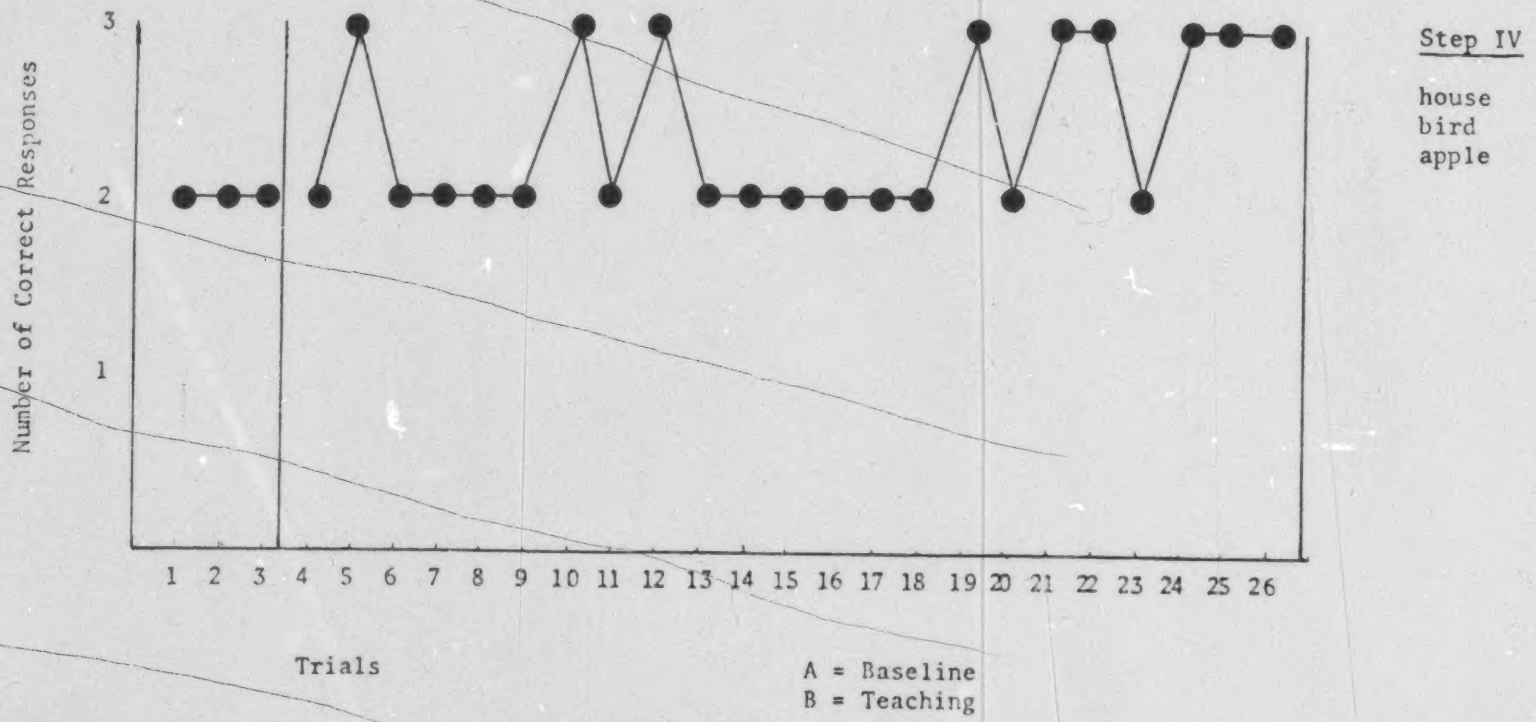


FIGURE IC

Labeling of Object Drawings

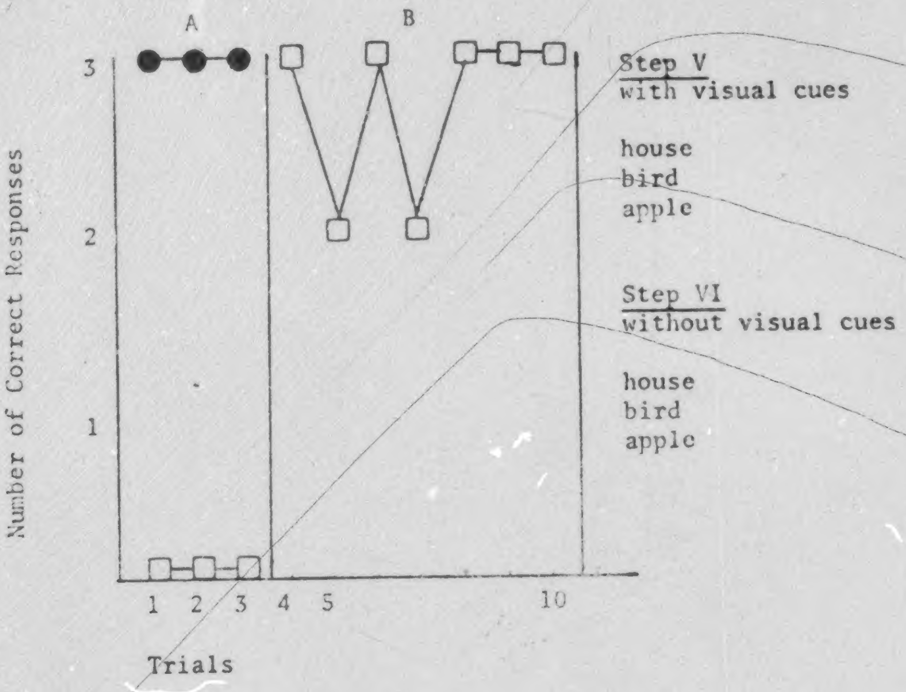
$\underline{S_9}$



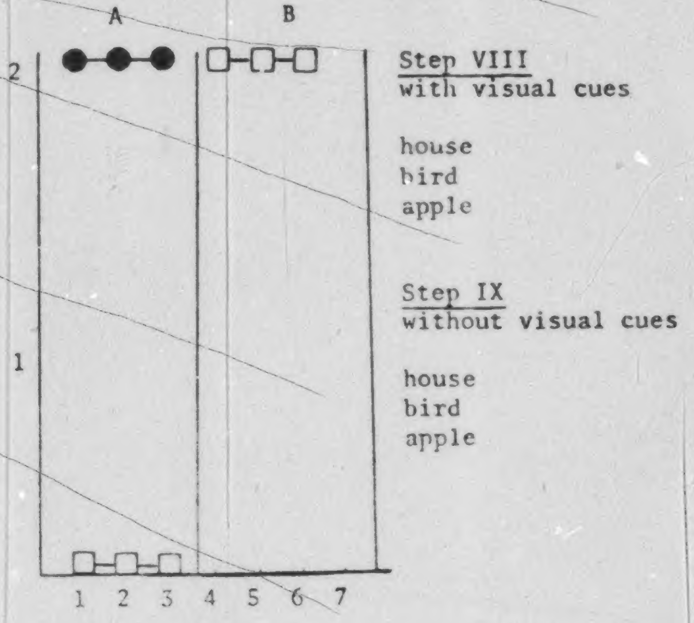
FIGURES ID and IE

Labeling of Sight Words

S_9



A = Baseline Steps V and VI
B = Teaching Step VI



A = Baseline Steps VIII and IX
B = Teaching Step IX

Color Program

This program was designed to provide the students involved with rudimentary language and reading skills related to eight basic colors. That is, attempts were made to teach the students to visually discriminate the colors, to verbally label the colors and to label sight words that represented the colors. In addition, as it was initiated early in the school year, the program was also used as a vehicle to teach and provide the students with practice following directions, attending, waiting between turns, touching and matching in response to verbal cues, other ancillary in-seat behaviors.

Again the reader should be cautioned that the components of the program as they are described below served the teacher as a standard from which to base departures when needed, rather than a recipe that should be adhered to at all costs. In fact, modifications in the program as it was originally designed were necessary and an illustrative example is presented.

Students (Ss)

Twelve Ss from Classroom A and B were involved in this program. Progression through the phases of the program was determined by the criterion performance of each S. Instruction was conducted in small groups of one T to 2 or 3 Ss. S_7 and S_{10} were not involved in this program.

Instructional Materials'

In addition to data sheets, samples of which are included at the end of this program, consumables in the form of water and dry cereal were used. The

---

'In some situations different materials than those described here were used e.g. (colored blocks). However, the colors of the alternate materials were the same as the materials described above.

following instructional materials were used:

Phase I. The following materials were developed and arranged for use in Phase I: 4 color cards 4 1/2" x 6" were cut from standard colored construction paper. These color cards were red, blue, green and yellow. During Phase IA the four color cards were arranged into the following three sets. The color that was verbally and visually cues is underlined below:

Set I	red	green
	red	green
	blue	blue
	green	blue
Set II	green	blue
	green	blue
	yellow	red
	yellow	red
Set III	green	yellow
	green	yellow
	red	blue
	red	blue

During Phase IB the four color cards were arranged into the following four sets:

Set IV	red	green	yellow
	red	blue	green
	red	yellow	blue
	green	blue	yellow
Set V	red	green	yellow
	red	blue	green
	red	yellow	blue
	green	blue	yellow
Set VI	red	green	yellow
	red	blue	green
	red	yellow	blue
	green	blue	yellow

During Phase IC the four color cards were arranged in sets of four.

Phase II. Phase II required the use of the color cards as they were arranged in Phases IA, IB and IC. However, the color cue cards used in Phase I were not used in Phase II.

Phase III. Phase III required the use of four color cards (red, green, blue, yellow).

Phase IV. Phase IV required the use of the four color cards used in Phase III and four sight word cards (3" x 9" manilla tagboard) each containing one of the four words red, blue, green and yellow.

Phase V. Phase V required the use of the four sight word cards only.

Phase VI. In Phases VI through X the colors brown, black, orange and white were substituted for the colors red, blue, green and yellow. These four colors were conveyed in a set of four colors in a manner similar to that used in Set VII of Phase IC.

Phase VII. The materials were arranged in Phase VII as they were arranged in Phase IIC.

Phase VIII. Same as Phase III except that the colors are different.

Phase IX. Same as Phase IV except that different color cue cards and four additional sight word cards were constructed (brown, black, white and orange).

Phase X. Same as Phase V but with sight word cards: brown, white, orange and black.

Phase XI, XII & XIII. During Phases XI, XII & XIII the Color Generalization Board produced by Ideal Toy Company was used. The colored construction paper used in the phases above was used to make 8 different color cards and 8 corresponding sight word cards that would fit the slots of the Generalization Board. In Phase XI the color cards and sight word cards red, green, blue and yellow were used on the Generalization Board. In Phase XII the color cards and sight word cards black, brown, orange and white were used on the Generalization Board. In Phase XIII all 8 color cards and sight word cards were used on the Generalization Board.

It should be noted that the sight word cards were reduced in size from 3" x 9" to 2" x 6 1/2".

Teaching Procedures

Phase I Matching colors in response to visual and verbal cues (red, blue, green and yellow).

IA. Matching one color to a mate in a set of two.

1) T placed two color cards (Set I) on the table directly in front of S_1 and held up above the colors a color cue card that matched a color on the table. T then said "S_1, touch (color held by T)." If S_1 touched the appropriate color card T smiled, said "Good," provided a consumable consequence, recorded a correct response (+), and presented different color cue card to S_2, etc.

2) If S_1 did not touch a color card or touched an incorrect one T said "No!", repeated the cue "Touch (color held by T)" and modeled the correct response by touching the color card. T then said "S_1 touch (color held by T)." If S_1 imitated the model T smiled, said "Good," did not issue a consumable consequence, and recorded "M" (model) on the data sheet, a different color card and cue card were then placed in front of S_2, etc.

3) If S_1 did not correctly imitate T's model, T said "No", repeated the cue, "S_1, touch (color held by T)" and primed the correct response. T then presented S_1 only with social consequences and recorded "P" (prime) on the data sheet. A different color card and cue card were presented to S_2, etc.

4) Instruction on Set I was terminated when S_1 made 12 consecutive correct responses during three consecutive trials after priming and imitative cues were removed. The procedures described above were followed until Ss reached criterion on Sets I, II & III of Phase I.

Phases IB and IC. The procedures used to teach the tasks required in Phases IB and IC were identical to those used to teach the tasks required in Phase IA. However, the materials used were different in that in Phases IB and IC Ss were required to match one color cue card to a mate in sets of three and four respectively.

Phase II Touching colors in response to verbal cues (red, yellow, green & blue).

Phase IIA Discriminating one color from two.

1) T placed two color cards on the table directly in front of S_1 and said "S_1, touch (color)." If S_1 touched the correct color card T smiled, said "Good," provided a consumable consequence, recorded a correct response (+), and different color cards were then presented to S_2, etc.

2) If S_1 did not touch a color card or touched an incorrect one, T said "No!", repeated the cue, "Touch (color)" and modeled the correct response by touching the color card. T then said "S_1, touch (color held by T)." If S_1 imitated the model T smiled, said "Good," did not issue a consumable consequence, and recorded "M" on the data sheet. Different color cards were then presented to S_2, etc.

3) If S_1 did not correctly imitate T's model, T said "No!", repeated the cue, "S_1 touch (color)" and primed the correct response. T then reinforced S_1 with only social consequences and recorded "P" on the data sheet. Different color cards were then presented to S_2, etc.

4) Instruction continued on Set I until Ss made 12 consecutive correct responses during three consecutive trials after imitative and priming cues were faded. The procedures described above were followed until Ss reached the criterion on Sets I, II and III of Phase IIA.

Phases IIB and IIC. The procedures used to teach the task required in Phases IIB and IIC were exactly those used to teach the tasks required in Phase IIA.

Phase III Labeling color cards. The following procedures were used to teach Ss to label the color cards (red, blue, green and yellow).

1) T held at S_1's eye level a color card and said, "S_1, what color is this?" If S_1 correctly labeled the color card T smiled, said "Good," provided a consumable consequence, recorded a correct response (+) and presented a different color card to S_2, etc.

2) If S_1 did not respond or did not correctly label the color card, T said "No!", repeated the cue "S_1, what color is this?" and verbally modeled the correct response, "(color)". T then repeated the cue: "S_1, what color is this?" If S_1 imitated the verbal model correctly labeling the color card T smiled, said "Good," did not issue a consumable consequence, recorded "M_1" (first model) on the data sheet and presented a different color card to S_2, etc.

3) If S_1 did not correctly imitate the verbal model, T said "No!", repeated the cue "S_1, what color is this?" and asked S_1 to verbally label the color: "S_1, say (color held by T)." If S_1 responded correctly, T presented only social consequences and recorded "M_2" (second model) on the data sheet. A different color card was then presented to S_2, etc.

4) If S_1 refused to respond or did so incorrectly T said "No!, This color is (color)", terminated the turn, recorded an incorrect response (-) on the data sheet and S_2 was presented with a different color card to label, etc.

5) Instruction continued until Ss made 12 consecutive correct responses during 3 consecutive trials after imitation cues were faded.

Phase IV Labeling sight word cards (red, yellow, blue, green) in response to visual and verbal cues.

The following procedures were used to teach Ss to label the sight word cards *with* the assistant of the color cue cards:

1) T placed the sight word card with a corresponding color cue card above it on the table directly in front of S_1 and T positioned his index finger to the left of the sight word card. T then said, "S_1, what word is this?" If S_1 correctly labeled the sight word card, T smiled, said "Good", issued a consumable consequence, recorded a correct response (+) and presented a different sight word card, color cue card and cues to S_2, etc.

2) If S_1 did not respond or incorrectly labeled the sight word card T said "No!", repeated the cue, "S_1, what word is this?", verbally modeled the correct response, "sight word" and repeated the cue, "S_1, what word is this?" If S_1 imitated the model T smiled, said "Good", did not provide a consumable consequence, recorded "M_1" on the data sheet and presented a different sight word card and cues to S_2, etc.

3) If S_1 did not respond or incorrectly imitated the verbal model, T said "No!", repeated the cue "S_1, what word is this?", pointed to the color sample with his index finger and said "S_1, what color is this?" S_1 then labeled the color card (a task learned in Phase III). T then returned his index finger to the sight word card and repeated the cue: "S_1, what word is this?" If S_1 correctly labeled the sight word card, T provided S_1 with social consequences only and recorded "M_2" on the data sheet. S_2 was then presented a different sight word card and cues, etc.

4) Instruction was continued on the sight words until Ss made 12 consecutive correct responses without any assistance from T.

Phase V Labeling sight word cards (red, blue, green and yellow) in response to verbal cues.

The following procedures were used to teach Ss to label the sight word cards *without* the assistance of the color cue cards:

BEST COPY AVAILABLE

1) T placed the sight word card on the table directly in front of S_1, positioned his index finger to the left of the sight word card and said "S_1, what word is this?" If S_1 correctly labeled the sight word card, T smiled, said "Good", issued a consumable consequence, recorded a correct response (+) and presented a different sight word card to S_2, etc.

2) If S_1 did not respond or incorrectly labeled the sight word, T said "No!" repeated the cue, "S_1, what word is this?" and modeled verbally the correct response, "(sight word)" . T then repeated the cue, "S_1, what word is this?" If S_1 imitated the model correctly, T smiled, said "Good", did not provide a consumable consequence, recorded "M_1" on the data sheet and presented a different sight word card to S_2, etc.

3) If S_1 did not respond or incorrectly imitated the model, T said "No!" repeated the cue "S_1 what word is this?" and asked S_1 to verbally label the sight word card, "S_1, say (sight word)". If S_1 correctly responded, T provided S_1 with social consequences only and recorded "M_2" on the data sheet.

4) If S_1 did not respond or did so incorrectly T said "No! This word is (word)", terminated instruction and recorded an incorrect response. S_2 was then presented with a different sight word card, etc.

5) Instruction was continued on the sight words until S_1 made 12 consecutive correct responses during 3 consecutive trials without any assistance from T.

Phases VI through X. The procedures described in Phases I through V were used to teach the tasks required in Phases VI through X. The only substantial difference was that the color cards, cue cards and sight word cards black, brown, white and orange were substituted for the color cards, cue cards and sight word cards red, blue, yellow and green.

Phase XI Matching sight words to color cards (red, green, blue and yellow).

The procedures used to teach Ss to match sight word cards to color cards are as follows:

1) T placed the four color cards on the Color Generalization Board. T then presented a sight word card at eye level to S_1 and said, "S_1 put the word next to the same color." If S_1 correctly positioned the sight word next to the color it represented T smiled, said "Good," issued a consumable consequence and recorded a correct response (+) on the data sheet. T then presented a different sight word card to S_2, etc.

BEST COPY AVAILABLE

2) If S_1 did not respond or did so incorrectly *T* said "No!" and gave the cue, "S_1 what word is this?" When S_1 correctly labeled the sight word (a task learned in Phase V) *T* repeated the cue "S_1 put the word next to the same color." If S_1 responded correctly *T* smiled, said "Good", did *not* provide a consumable consequence and began S_2's turn with a different sight word card, etc.

3) If S_1 did not respond or did so incorrectly *T* said "No!" and gave the cue "S_1, what word is this?" When S_1 correctly labeled the sight word (a task learned in Phase V) *T* then cued, "S_1, touch (color of sight word)." (A task learned in Phase II). When S_1 correctly labeled the sight word card and touched the corresponding color card, *T* repeated the cue "S_1 put the word next to the same color." If S_1 responded correctly *T* provided social consequences only and proceeded to give S_2 a different sight word card, etc.

4) If S_1 did not respond correctly *T* said "No!" and placed the sight word card next to the corresponding color card on the Generalization Board, recorded an incorrect response, and proceeded to instruct S_2, etc.

5) These procedures were followed until each *S* correctly placed the four sight word cards (red, blue, yellow and green) next to the corresponding color cards on three consecutive occasions without any assistance from *T*.

Phase XII. The same procedures used to teach the tasks required in Phase XI were used to teach the tasks required in Phase XII, except the color cards and sight word cards black, brown, orange and white were substituted for red, blue, green and yellow.

Phase XIII. In Phase XIII the tasks of Phase XI and XII were combined so that *Ss* were asked to respond to 8 sight word cards and 8 color cards on the Generalization Board.

RESULTS

Measurement Design

Prior to instruction on the tasks required by any of the 13 phases baseline measures were obtained using procedures described in other programs in this report. The specific procedures will not be presented in detail here. In Phase I, each *S* was given 3 opportunities to respond to each of the cues of Sets I through VII. Then each *S* was given instruction on the tasks required by Set I of Phase I. When an S reached criterion on Set I, baseline measures of the remaining six sets were obtained. If an S performed at criterion on any set during the 3 trial baseline period, instruction was not provided. If an S did not perform at criterion during the 3 trial baseline period, instruction was provided on the sets in ascending order. When an S reached criterion on Phase I, baseline measures were obtained on Phase II. When an S reached criterion on Phase II, baseline measures were obtained on Phase III, etc.

Obviously, space does not permit the presentation and discussion of the performance pattern of each S on each phase. Thus, it was decided to communicate the results of the program in table form (Table 1). However, generalization of skills seemed to be manifested by many Ss in different phases.

Table I depicts the criterion performance of all 12 Ss on Phases I through XIII. It should be noted that some Ss performed at criterion in certain phases during initial baseline periods making instruction unnecessary and due to absenteeism some Ss missed a relatively large amount of instructional time.

To summarize Table I, the following statements seem in order:

1) Three Ss (5, 6, and 8) required a large number of teaching trials and/or modifications in the color program in order to reach criterion on several of the sets of Phase I. The end of the school year prevented further progress.

2) Four Ss (14, 1, 2, and 4) required instruction on only a few of the sets of Phase I before criterion performance was obtained on the remaining sets during subsequent baseline periods.

3) Two Ss (3 and 12) manifested unusually erratic performance patterns in that they were taught most skills with relative ease and then required a large number of teaching trials on a particular phase. S_3 required a large number of teaching trials on Phase III and S_{12} required a large number of teaching trials on Phase VIII.

4) Three Ss (9, 11 and 13) performed at criterion on all of the 13 phases, either during baseline measurement periods or after instruction.

Program Modifications

After approximately 50 teaching trials on Phase I, Set I, Ss 8 and 14 were responding so erratically it was decided by T to design modifications in the teaching procedure. One procedural modification used with S_8 will be discussed.

The seven Sets in Phase I were divided into smaller subsets demanding only two correct responses per set from S_8 instead of 4 correct responses per set. The color that was verbally and visually cued is underlined below.

Subset 1	blue	yellow
	yellow	blue
Subset II	blue	yellow
	blue	yellow
Subset III	green	yellow
	green	yellow
Subset IV	red	green
	red	green
Subset V	green	blue
	green	blue
Subset VI	yellow	red
	yellow	red
Subset VII	red	blue
	red	blue

The teaching procedure used was the same as delineated in Phase IA.

On a single trial S_8 could make from 0 to 2 correct responses. Criterion was set at 8 consecutive correct responses in 4 trials.

As is depicted in Figure 1 during the initial baseline period (trials 1-3) S_8 emitted 2, 0, 0, 0, 1, 1, and 0 correct responses out of a possible 6 correct responses to Subsets I through VII respectively. Subsequently, instruction was initiated and a total of 57 teaching trials were required for S_8 to reach criterion on Subset I.

During the second baseline period (trials 61-63) Subset 1 was used first and S_8 emitted only 3 out of a possible 6 correct responses. Because of this low number of correct responses *T* decided to again initiate the teaching procedure on Subset 1 instead of continuing the second baseline on the remaining six subsets. A total of 21 teaching trials were necessary for S_8 to re-reach criterion on Subset I.

However, during the third baseline period (trials 85-87) S_8 again emitted only 3 out of a possible 6 correct responses. It was therefore hypothesized that one reason for the decrement in correct responding during baseline periods may have been due to the lack of consequation during those periods. *T* again decided to initiate the teaching procedure on Subset I. By trial 131 *T* had hypothesized from experiences with an attending program designed for S_8, that S_8 was having difficulty maintaining eye contact with objects placed on the table directly in front of him. Consequently, *T* decided to present the color cards to S_8 on a different angle (eg. 50° - 70° instead of 0°). After this added modification only 20 teaching trials (trials 132-151) were required for S_8 to reach criterion on Subset I.

On the fourth baseline period (trials 152-154) S_8 maintained criterion on Subset I and performed the tasks of Subsets II through VII on three consecutive occasions even though instruction was not received. It should be noted that the baseline measures of trials 152-154 were obtained when the color cards were on a 50° - 70° angle.

Discussion

The color program was one of the first opportunities the students had to work in a small group teaching situation. Consequently, a great deal of time was spent developing appropriate ancillary behaviors (responding to the teacher's verbal directions, nondisruptive in seat behavior during and between turns, attending to materials, etc.). The behavior and attending problems were always managed in conjunction with the program even though it was necessary at times to devise individual management programs.

For some students experiencing difficulty in the program, materials with specific instructions were sent home to parents who provided extra instruction.

Once the students learned the sight words, these words were sent home to parents. Besides being able to drill the child on the words, parents were also reinforced for working with the child because they were usually elated that their child was "reading."

Not all students were able to reach the objectives as they were originally designed. These students forced the teacher to demonstrate that an objective can, and at times needs to, be broken down into simpler tasks to meet the entering level of the student.

After some of the students were able to label colors in the structured format above, teachers were concerned that they generalize their learning to less structured environments. Some of the activities used to induce generalization are listed below:

1) Labeling the color of different objects;

2) Discussing colors of childrens clothes and objects in their environment on a daily basis;

3) Paperwork which included
    - choosing the color crayon labeled by teacher and coloring an object,
    - touching, putting an "X" on, or circling the color named by the teacher,
    - sorting different objects into different color piles.

Table 1
Color Program

Phases

Students	I							II							III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII
	IA			IB			IC	IIA			IIB			IIC											
	Sets							Sets																	
	I	II	III	IV	V	VI	VII	I	II	III	IV	V	VI	VII											
5	X																								
8	X	X	X																						
6	X	X	X	X																					
14	X	X	X	X	X	X	X																		
1	X	X	X	X	X	X	X	X																	
2	X	X	X	X	X	X	X	X	X																
4	X	X	X	X	X	X	X	X	X																
3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X									
12	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

X = S̲ performed at criterion either during baseline periods or after instruction.

Color Program

SAMPLE DATA SHEET

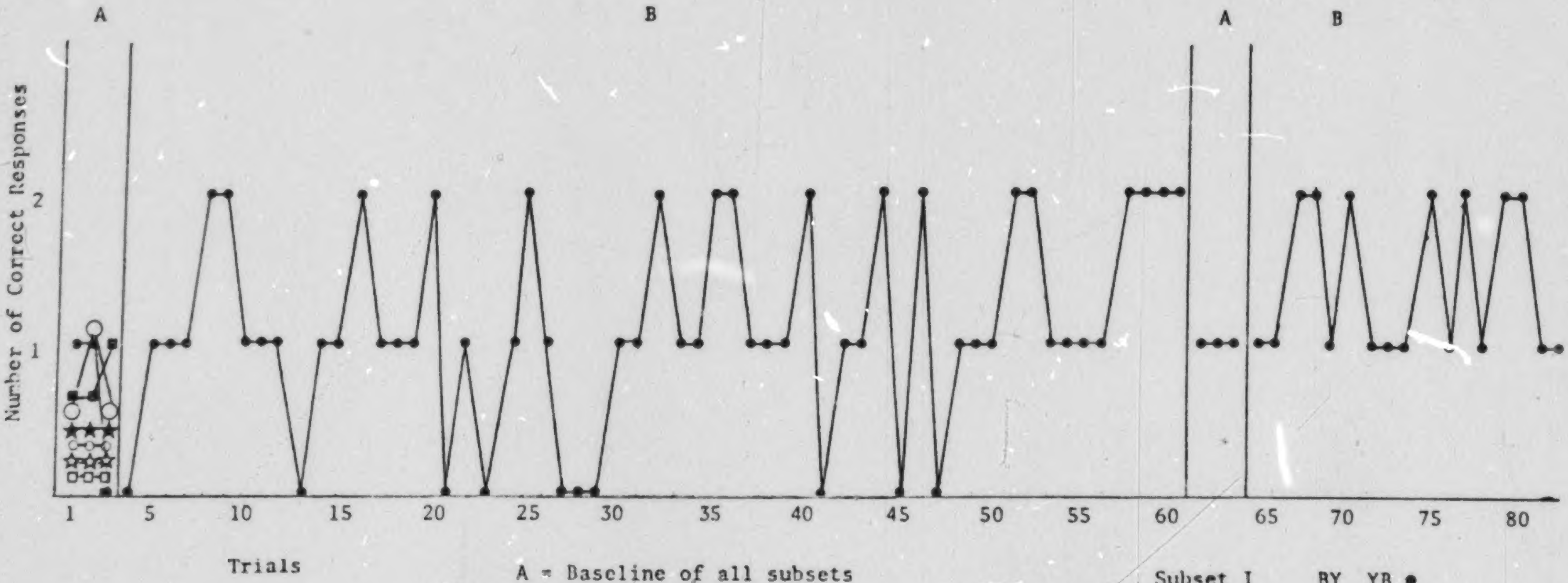
Date: ________ Phase: IA Set: I Cue: ________

Name	Trial	RG	BY	RG	BY

R = Red
G = Green
B = Blue
Y = Yellow

FIGURE 1
Color Program
S_8

R = Red
B = Blue
Y = Yellow
G = Green



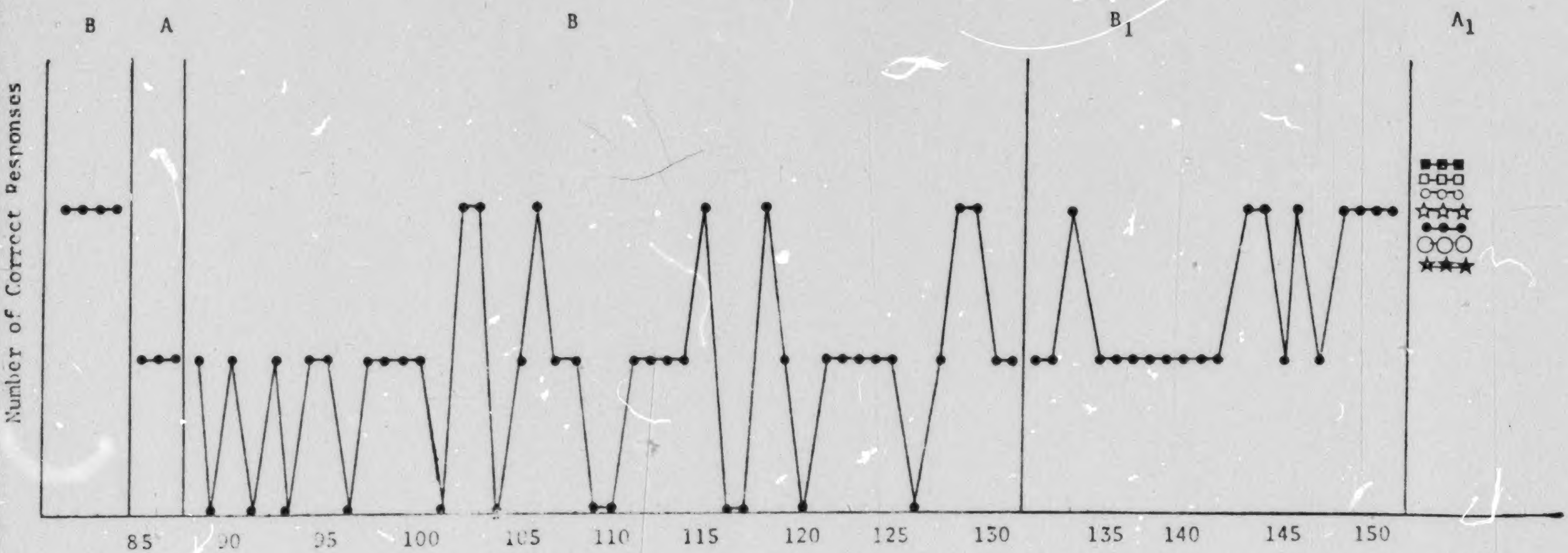
A = Baseline of all subsets
B = Teaching of Subset I
A = Baseline Subset I
B = Teaching Subset I
A = Baseline Subset I
B = Teaching Subset I
B_1 = Teaching Subset I
(on approx. 50° - 70° angle)
A_1 = Baseline of all subsets
(on approx. 50° - 70° angle)

Subset I BY YB ●
II $\overline{B}Y$ $B\overline{Y}$ ★
III $\overline{G}Y$ $G\overline{Y}$ ◻
IV $\overline{R}G$ $R\overline{G}$ ○
V $\overline{G}B$ $G\overline{B}$ ◯
VI $\overline{Y}R$ $Y\overline{R}$ ☆
VII $\underline{\overline{R}}B$ $R\underline{\overline{B}}$ ■

FIGURE 1 (cont.)

Color Program

$\underline{S_8}$



A = Baseline of all subsets
B = Teaching of Subset I
A = Baseline Subset I
B = Teaching Subset I
A = Baseline Subset I
B = Teaching Subset I
B_1 = Teaching Subset I
(on approx. 50° - 70° angle)
A_1 = Baseline of all subsets
(on approx. 50° - 70° angle)

Subset	I	BY	YB	●
	II	$\overline{B}Y$	$B\overline{Y}$	★
	III	$\overline{G}Y$	$G\overline{Y}$	▫
	IV	$\overline{R}G$	$R\overline{G}$	○
	V	$\overline{G}B$	$G\overline{B}$	◯
	VI	$\overline{Y}R$	$Y\overline{R}$	☆
	VII	$\underline{\overline{R}B}$	$\underline{R\overline{B}}$	■

BASIC ALPHABET SKILL PROGRAM

Reading has always been an essential component of public school instructional programs. For severely retarded individuals in our society, it is imperative that they possess the necessary reading skills to survive in a community setting. One method of teaching reading to severely handicapped students is a form of the "whole word method" described by Brown and Perlmutter (1971). However, the whole word approach does have deficiencies; namely, each word must be taught individually and students typically do not acquire the skills necessary to read words to which they have not been exposed in a training program.

Brown et. al. (1973) have noted that being able to read a small number of works is obviously not sufficient for community survival. Therefore, it seems beneficial to attempt to teach young severely handicapped students basic pre-reading skills so that future development may result in a general word attack strategies. Possessing the skills necessary to label the letters of the alphabet is an important reading landmark. Once a student can label the letters of the alphabet, he can be taught to pair certain letters with specific sounds, thus establishing a basic phonic repertoire. Basic phonic analysis can then be developed into higher level word attack and reading strategies; for example--combining letters to form different sounds and spelling. Developing such skills, provides the student with procedures to decode new words without direct training on those words.

This program is concerned with teaching basic pre-reading skills related to the alphabet. More specifically, attempts were made to teach students to match letters, to touch letters from a verbal cue, and to label the twenty-six letters of the alphabet.

Before the specific aspects of the program are presented the following points should be delineated:

1) This program was designed and implemented toward the end of the school year after the students had acquired many related skills;

2) During baseline measures several students demonstrated remarkable matching and touching skills;

3) Due to the dearth of instructional time remaining in the school year, several rules of measurement were violated;

4) Also due to the lack of time, few of the students received direct instruction on the tasks.

Nevertheless, the program is presented in detail in an attempt to provide the reader with a standard to operate from if he or she chooses to consider the use of this program, and to serve as an indication of future instructional plans for the students in Classrooms A and B.

STUDENTS AND MATERIALS:

Students (Ss): Three Ss (1,3,4) from Classroom A and four Ss (9,11,12,13) from Classroom B were involved in this program. Instruction was conducted in small group arrangements with one teacher (T) to 3 or 4 Ss. (See room designs in Appendices). Progress through the components of the program was determined by the performance of individual Ss.

Materials:

The materials used in Classroom A are as follows:

1. Twenty-six 8" x 5" (white) flashcards, each containing one printed upper case letter of the alphabet.

2. Eight 14" x 5½" white cards of construction paper (alphabet cards), with three evenly spaced upper case letters printed in black magic marker. A ninth card had only two letters on it. (The letters were approx. 4" in height.) The cards contained the following sets of letters:

Set I A B C

Set II D E F

Set III G H I

Set IV J K L

Set V M N O

Set VI P Q R

Set VII S T U

Set VIII V W X

Set VIX Y Z

3. 3" x 5" record cards were constructed for each *S*. Various types of adhesive seals (stars, animals, etc.) were used as consequences for correct responses. *T* would place a seal on *S's* card when *S* responded correctly and *Ss* would take cards home at the end of the school day.

The materials in Classroom B are as follows:

1. Twenty-six 3" x 4" flashcards (manilla tagboard) each containing one lower case printed letter of the alphabet.

2. Six 10" x 4" manila tagboard cards (alphabet cards) with four evenly spaced lower case letters printed in black magic marker. A seventh card contained only two letters. (Letters were approx. 2" in height.) The cards contained the following sets of letters:

Set I a b c d

Set II e f g h

Set III i j k l

Set IV m n o p

Set V q r s t

Set VI u v w x

Set VII y z

The differences in materials used between Classroom A and B are due primarily to the judgments of the teachers. Each *T* had specific reasons for starting *Ss* on the upper or lower case letters. One reason was the anticipated difficulty of discrimination between letters. Another reason was the type of letters most often encountered by *Ss* in their classroom environment. The difference in the number of letters on a response card (3 or 4) was due to individual *S's* scanning skills and one teacher's desire for a different reinforcement schedule. Although materials did differ between classrooms, the instructional sequence and procedures were similar. Therefore, in describing sequence and procedure, reference will be made to the materials used in Classroom A. The reader can easily adapt by substituting the materials used in Classroom B.

TASK ANALYSIS:

Phase I - Matching one letter to a mate in a set of three.

The terminal objective for S is to touch the correct letter when presented a visual and verbal cue by T. That is, T presents an alphabet card with three letters on it. T then holds up a flashcard and says to S, Touch (letter held by T).

	Teacher Cue (C) *	Student Responses
Set I		
	C_1 A B C	R_1 S touches A
	C_2 A B C	R_2 S touches B
	C_3 A B C	R_3 S touches C
Set II		
	C_1 D E F	R_1 S touches D
	C_2 D E F	R_2 S touches E
	C_3 D E F	R_3 S touches F
Set III		
	C_1 G H I	R_1 S touches G
	C_2 G H I	R_2 S touches H
	C_3 G H I	R_3 S touches I
Set IV		
	C_1 J K L	R_1 S touches J
	C_2 J K L	R_2 S touches K
	C_3 J K L	R_3 S touches L
Set V		
	C_1 M N O	R_1 S touches M
	C_2 M N O	R_2 S touches N
	C_3 M N O	R_3 S touches O

* The underlined letter is the one visually and verbally cued by T.

Set VI

C_1 P Q R	R_1 S touches P
C_2 P Q R	R_2 S touches Q
C_3 P Q R	R_3 S touches R

Set VII

C_1 S T U	R_1 S touches S
C_2 S T U	R_2 S touches T
C_3 S T U	R_3 S touches U

Set VIII

C_1 V W X	R_1 S touches V
C_2 V W X	R_2 S touches W
C_3 V W X	R_3 S touches X

Set IX

C_1 Y Z	R_1 S touches Y
C_2 Y Z	R_2 S touches Z

Phase II - Touching letters in response to a verbal cue.

The terminal objective for S is to touch the correct letter when presented a verbal cue only by T. That is, T presents an alphabet card with three letters on it to S_1, T then says "Touch (letter name)."

Teacher Cue	Student Responses
Teacher cues are exactly the same as in Phase I (Sets I-IX), with the exception that a visual cue (flashcard) was not presented to S.	Responses are identical to those in Sets I-IX of Phase I.

Phase III - Verbal labeling of the letters of the alphabet.

The terminal objective is for Ss to verbally label the letter of the alphabet which is presented by T and when T says, "What letter is this?" That is, T presents a flashcard to S with a letter of the alphabet on it and says, "S, What letter is this?"

Teacher Cues

Set I	
C_1 T presents A and says "What letter is this?"	R_1 "A"
C_2 T presents B and says "What letter is this?"	R_2 "B"
C_3 T presents C and says "What letter is this?"	R_3 "C"
Set II	
C_1-C_3 D, E, F presented as above	R_1-R_3 "D", "E", "F"
Set III	
C_1-C_3 G, H, I presented as above	R_1-R_3 "G", "H", "I"
Set IV	
C_1-C_3 J, K, L presented as above	R_1-R_3 "J", "K", "L"
Set V	
C_1-C_3 M, N, O presented as above	R_1-R_3 "M", "N", "O"
Set VI	
C_1-C_3 P, Q, R presented as above	R_1-R_3 "P", "Q", "R"
Set VII	
C_1-C_3 S, T, U presented as above	R_1-R_3 "S", "T", "U"
Set VIII	
C_1-C_3 V, W, X presented as above	R_1-R_3 "V", "W", "X"
Set IX	
C_1-C_2 Y, Z presented as above	R_1-R_2 "Y", "Z"

INSTRUCTIONAL SEQUENCE:

Prior to teaching, T used a baseline procedure to determine each Ss initial ability to match, to touch with verbal cue only and to label the twenty-six letters of the alphabet. The following procedures were used:

Baseline Procedure:

Phase I:

1) T placed an alphabet card (3 letters to a card) in front of S_1 on the table then T would hold up a flashcard with a letter on it which matched a letter on the alphabet card. Then T would say "Touch (name of letter held by T)". Regardless of S's response, T said "Thank you", recorded a "+" or "-" appropriately on the data sheet, and presented a different flashcard to S_2, etc.

2) T followed this procedure until each S responded to each of the letters in all nine sets on three occasions. (In some instances four trials were necessary to get more accurate baseline measures.)

Phase II: Baseline

T used the baseline procedure described in 1 and 2 above. The only exception was that a visual cue (flashcard) was not presented to each S.

Phase III: Baseline

1) T placed a flashcard with the upper case letter of the alphabet in front of S_1. T said, "S, What letter is this?" Regardless of the response of S_1, T said "Thank you", recorded the response appropriately on the data sheet and presented a different flashcard to S_2, etc.

2) T followed this procedure until each S responded to each of the letters in the nine sets on three occasions.

After baseline measurement had been obtained on all three phases of the program, T began instruction.

TEACHING PROCEDURES:

Phase I: Teaching Ss to match letters in response to visual and verbal cues.

1) T placed an alphabet card in front of S_1 on the table, then T held up a flashcard with a letter on it which matched a letter on the alphabet card.

Then *T* would say "Touch (*name of letter held by T*)". If $\underline{S}_1$ responded correctly by touching the appropriate letter on the alphabet card *T* smiled, said "good", provided a consequence (put a seal on the daily card of $\underline{S}_1$), recorded a "+" on the data sheet and presented a different flashcard to $\underline{S}_2$, etc.

2) If $\underline{S}_1$ failed to respond or responded incorrectly (touched the wrong letter), *T* said "No", repeated the cue "Touch (letter held by *T*)" and modeled the correct response by touching the appropriate letter. *T* then repeated the cue, "$\underline{S}_1$, touch (letter held by *T*)". If $\underline{S}_1$ responded correctly, *T* smiled, said "Good", did *not* give $\underline{S}_1$ a seal, recorded an "M" on the data sheet and presented a different flashcard to $\underline{S}_2$, etc.

3) If $\underline{S}_1$ did not imitate *T's* model, *T* repeated the verbal cue, "$\underline{S}_1$, touch (letter held by *T*)", and primed the correct response by physically guiding $\underline{S}_1$*'s* hand until it touched the correct letter. When $\underline{S}_1$ completed the correct response with priming, *T* smiled, said "Good", recorded a "P" on the data sheet and presented a different flashcard to $\underline{S}_2$, etc. On each subsequent trial *T* reduced the amount of physical prompting and imitation cues until $\underline{S}_1$ responded correctly to the initial verbal cue.

4) The procedures described above were followed until an *S* correctly touched each of the three letters in a set on three consecutive occasions. *T* then repeated the process with successive sets of letters.

Phase II - Teaching *Ss* to touch letters in response to verbal cues

The teaching procedure used to teach matching (Phase I) was used to teach touching with a verbal cue only. The major difference being that the visual cues (flashcards) were not presented.

Phase III - Teaching *Ss* to verbally label the letters of the alphabet.

*1) *T* displayed a flashcard with an upper case letter on it in front of S_1. *T* then said, "S_1, What letter is this?" If S_1 responded with the correct verbal label of the letter, *T* smiled, said "Good", provided a consequence (put a seal on *S_1's* card), recorded a "+" on the data sheet and presented a different flashcard to S_2, etc.

2) If S_1 failed to respond or incorrectly labeled the letter, *T* said, "No", repeated the cue, "What letter is this?" and modeled the correct response by verbally labeling the letter. Then *T* repeated the verbal cue, "S_1, What letter is this?" If S_1 responded correctly, *T* smiled, said "Good", did not give S_1 a seal, recorded an "M" on the data sheet and presented a different cue to S_2, etc.

3) If S_1 did not imitate *T's* verbal model of the letter label, *T* said "No", and repeated the procedure described in 2. If S_1 again failed to imitate correctly, *T* terminated *S_1's* trial and presented a different flashcard to S_2, etc.

4) *T* followed the above procedure until an *S* correctly labeled the three letters in a set on 3 consecutive occasions. *T* then began instruction on successive sets.

During the teaching of each of the phases, *T* selected sets for instruction on the basis of *S's* performance during baseline measurement. For example, if an *S* responded correctly on Sets I, II, and IV during baseline. *T* began instruction with Set III. Then *T* went to instruction of Sets V, VI, VII, VIII, and IX successively.

---

* In classroom B, *T* placed the four letters in a set in order on the table, then picked up one of them and used it as the flashcard.

CLASSROOM A:

Table I represents two kinds of performances. First, it represents approximations of criterion responding during baseline trials and second, it represents criterion responding after teaching. During the four (or three) baseline trials of Phase I the 3 Ss in Classroom A made a total of 265 of a possible 286 correct responses. As responding was so close to criterion, it was decided not to initiate the teaching procedure designed for Phase I in that Ss would probably acquire the desired visual discrimination skills in Phase II. In addition, S_4 performed close to criterion level during the baseline trials of Phase II, and thus, teaching was then initiated on the tasks of Phase III. It was necessary to teach Ss 1 and 2 to perform the tasks of Phases II. As can be determined from Table 1, S_1 reached criterion on Set I of Phase II, S_3 reached criterion on all 9 sets of Phase II and Sets I, II, and III of Phase III.

During the two baseline trials of Phase I, the 4 Ss in Classroom B made a total of 195 out of a possible 208 correct responses. As responding was so close to criterion, it was decided not to initiate the teaching procedures designed for Phase II. Thus it was necessary only to teach S_{11} to perform the labeling tasks of Phase III.

The individual performance and acquisition pattern of all Ss are available. However, the incompleteness of the data mitigates against inclusion here.

Table 1
Classroom A

	Phase I Matching									Phase II Touching									Phase III Labeling								
	I	II	III	IV	V	VI	VII	VIII	IX	I	II	III	IV	V	VI	VII	VIII	IX	I	II	III	IV	V	VI	VII	VIII	IX
S_1	X	X	X	X	X	X	X	X	X	X																	
S_2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
S_3	X	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X	X	

Table 2
Classroom B

	Phase I Matching									Phase II Touching									Phase III Labeling								
	I	II	III	IV	V	VI	VII	VIII	IX	I	II	III	IV	V	VI	VII	VIII	IX	I	II	III	IV	V	VI	VII	VIII	IX
S_9	X	X	X	X	X	X	X	X	X																		
S_{12}	X	X	X	X	X	X	X	X	X																		
S_{13}	X	X	X	X	X	X	X	X	X	X																	
S_{11}	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

X = Criterion performance approximated or obtained during baseline measure and criterion performance obtained after teaching.

Chart Story Program

The programs delineated in this report present a teaching procedure for teaching severely handicapped students to initially make gross visual discriminations (Receptive Language Program, Colors Program, Big/Little Program, etc.) and to then make finer discriminations (Object Sight Word Program, Alphabet Program, etc.). Many of the programs were taught concomitantly, and all were concerned with important skills that are required for successful chart story reading.

In addition to being an effective method of teaching selected sight words (Huppler, 1972) chart stories as they were used here were also designed to accomplish the following:

A) maximize success experiences when initiating a student into complex reading tasks,

B) develop rudimentary comprehension skills,

C) teach left to right and top to bottom reading movements,

D) expose students to capital and lower case letter combinations.

Before the chart stories were presented, the students were taught a number of sight words in nonstory arrangements (See Color Program and Sight Word Program) to prepare the students for success on the chart stories. The previously taught sight words and all new words in the chart stories were chosen so they could be developed into chart stories based on real activities and experiences encountered in the classroom.

Students (Ss). The 3 Ss (9, 11, and 13) involved in the Chart Story Program had met criterion level on several prerequisite tasks in the Colors

Program and the Sight Word Program. Each Ss individual progression through the program was determined by his criterion performance on each Phase. A new story, however, would not be presented until all Ss had reached criterion on the same story. Ss who reached criterion were reviewed on previously learned stories. The teaching arrangement consisted of 3 Ss facing the chart story and one teacher (T) sitting on the side.

Materials. The materials utilized in the program consisted of:

1) nine 24" x 36" pieces of manilla tagboard;

2) a variety of colored felt tipped pens;

3) a chart story stand;

4) a pointer;

5) the following three dimensional objects:
    red ball
    green ball
    green balloon
    red balloon
    yellow balloon
    a live fish (orangish)

6) the following drawings:
    red apple
    red and black house
    yellow bird
    blue bird

7) 3" x 9" sight word cards;

8) data sheets which included space for date, trial number, name, total number of correct responses made to chart story and total number correct on sight words. An example data sheet is included at the end of this program.

Sequence of Chart Stories. Each chart story was concerned with objects. Drawings of these objects were made and placed on the chalk board or the chart story. These object drawings were identical to those used in the Sight Word Program.

Chart Stories I, II, and III. The format of the first 3 chart stories was identical to give Ss the benefit of positioning cues from words. The format is as follows:

Noun

Article	color adjective		noun
Article	noun	verb	color adjective
Verb	verb		verb

The only sight words presented in isolation were: nouns (previously learned in Sight Word Program); color adjectives (previously learned in Color Program) and verbs (except "is").

I. Ball

The red ball
The ball is red.
Jump, jump, jump.

Sight words in isolation
- ball
- red
- jump

II. Balloon

The green balloon
The balloon is green.
Jump, jump, jump.

Sight words in isolation
- balloon
- green
- jump

III. Fish

The orange fish
The fish is orange.
Swim, swim, swim.

Sight words in isolation
- fish
- orange
- swim

Three-dimensional objects (ball, balloon, and fish respective to chart stories I through III) were used in conjunction with the story.

The word format for chart stories IV through IX was then changed to help insure against Ss responding correctly because of word placement cues only.

Chart Story IV. The presentation of chart story number IV consists of the use of a three-dimensional object; a different word format; introduction of the conjunction "and". The sight words being presented in isolation were: nouns (previously learned); color adjectives (previously learned); verbs (except "is").

IV. Ball and Balloon

The ball is green.
The balloon is red.
Jump ball. Jump balloon.

Sight words in isolation
- ball
- balloon
- red
- green
- jump

Chart Stories V and VI consist of a different word format each; the use of three dimensional objects for story presentation; and all sight words presented in isolation.

V. Jump

Jump red ball.
Jump yellow balloon.
Ball and balloon

Sight words in isolation
- jump
- red
- ball
- yellow
- balloon
- and

VI. Fish and Ball

The fish is orange.
The ball is red.
Swim fish. Jump ball.

Sight words in isolation
- the
- red
- orange
- swim
- jump
- is
- and
- fish
- ball

Chart Stories VII, VIII, and IX consist of different word arrangements; more complex sentence patterns; the use of two-dimensional pictures for story presentation; and all sight words presented in isolation.

VII. Red Apple

The apple is red.
The apple is big.
The apple is red and big.

Sight words in isolation
- red
- apple
- is
- big
- and

VIII. House

See the little house.
Red and black house
See, see, see.

Sight words in isolation
- see
- the
- little
- house
- red
- and
- black

IX. Bird

The big bird is yellow.
The little bird is blue.
See big. See little.

Sight words in isolation
- the
- big
- bird
- is
- yellow
- little
- blue
- see

Teaching Procedures.

Baseline measures of the students' ability to read the chart stories were not obtained in that the teacher of Classroom A neither wanted to remain neutral when exposing the students to the charts nor did she want to allow responses to go uncorrected. Again the reader is reminded that one objective of the program was to introduce chart stories in a manner such that the students would experience the most success on their initial contacts with chart stories. Thus, the following procedures were implemented:

1) Ss were seated in front of a blackboard. T held an object (chart stories I through VI) or object drawing (chart stories VII through IX) at eye level in front of Ss. T would then try to elicit verbal responses from Ss that could be written down to make a chart story (i.e., T held up a ball and said "What is this?", S_1 responded "Ball". T then said "Yes. Let's write a story. We will name the story Ball. I will write Ball down, etc.").

2) When the story was written on the board, T would then read the story pointing to each word with a pointer. T then said "S_1, you read the story." If S_1 correctly read the story T smiled, said "Great" etc. and allowed S_1 to play with the object (i.e., ball) the story was about (In Sets VII through IX where two dimensional pictures were used T allowed S to attempt to draw the object on the board). S_2 would then receive a turn, etc.

3) If S_1 did not know or incorrectly responded to a word T said "No, that word is (word)." S_1 would then be asked to read the phrase or sentence again. After S_1 completely read the story T smiled, said "Wonderful" etc., but did not allow S_1 to play with the object (or attempt to draw it on the board). S_2 would then be allowed to read the story, etc.

4) Although the data sheets provided space for marking each word of the story correct or incorrect, *T* only recorded the incorrect responses in an attempt to minimize interference with *S*'s reading. The results were then transferred (total number of correct words read) to frequency polygons. Graphs were used by *T* to obtain an indication as to whether or not *S* was experiencing difficulty and when *S* reached a criterion of three consecutive readings. Each word in the story was counted as one possible correct response (i.e., Chart Story I had a possible 11 correct responses).

On the second trial *T* transferred the story to manilla tagboard. The teaching procedure was the same as above except *T* did not read the story before *S* was asked to read.

Teaching Sight Words.

1) *T* held the sight word card at eye level directly in front of S_1 and said "S_1, what word is this?" If S_1 correctly responded *T* smiled, said "Good work, etc.", allowed S_1 to hold the sight word and recorded a correct response (+) on the data sheet. S_2 was presented with a different sight word card, etc.

2) If S_1 did not respond or incorrectly labeled the sight word *T* said "No", repeated the cue "S_1, what word is this?" and modeled the correct response "*(Sight word)*". The cue was again repeated for S_1 to respond to. If S_1 correctly imitated the model *T* smiled, said "Very good, etc." but did not give S_1 the sight word to hold. *T* then recorded "M_1" (first model) on the data sheet and presented a different sight word card to S_2, etc.

3) If S_1 did not respond or did so incorrectly *T* said "No", repeated the cue "S_1, say *(sight word)*". If S_1 imitated the model *T* supplied only social consequences and presented a different sight word card to S_2, etc.

4) If S_1 still did not respond or did so incorrectly *T* said "No, this word is *(sight word)*", the turn was terminated and *T* recorded an incorrect response. S_2 was then presented with a different sight word card, etc.

5) Instruction was continued until *Ss* reached criterion of 3 consecutive trials on the sight words.

Results

The 3 *Ss* (9, 11, and 13) reached criterion on all nine chart stories and their corresponding sight words.

Two patterns of responding occurred across Chart Stories I through IX for all 3 Ss that warrant comment. First, after the presentation of Chart Story I the number of trials to criterion decreased through Chart Story III. When the word format was changed in Chart Story IV, the number of teaching trials to criterion for each S increased dramatically. This suggested that Ss were relying heavily on position cues of words in Chart Stories I through III instead of discriminating the individual words. After the presentation of the first format change in Chart Story IV, a second pattern of responding developed. The number of trials necessary to reach criterion steadily decreased across Chart Stories IV through IX, so that for some Ss criterion was reached on the first 3 trials even though a different format was used for each chart story and sentence patterns were becoming more complex.

Comments

It is felt the major objectives of the program were reached. By not bombarding the students with too many new sight words it is felt they were extremely successful in their first contact with chart stories. By changing the format often, the students were able to read different forms of a sentence or sentences (consisting of words they were taught) in a variety of settings. It should be noted at this point that Ss were not discouraged from using position cues of words to help them attack unknown words, but it was hoped here to deter Ss from relying upon them too heavily.

There did not seem to be a generalization problem when changing from the large print of a chart story to the smaller print of teacher made books.

Comprehension skills were developed to the point where the teacher could remove the chart story after the student had read it and the student could answer questions and/or tell the reader about the story.

The use of capital letters and punctuation marks where appropriate did not seem to hinder students from being able to label a word whether it was capitalized or had punctuation marks next to it.

Although the teacher feels the chart story program could be labeled a "success" a very grave problem has become evident. If the program is a success, why is it a success? At this point we cannot answer that question because there are too many unaccountable variables that might have effected the performance.

Sample Data Sheet - Chart Story Program

Date: ____________________

Trial # ____________

Name	Red	Apple				

Name	The	apple	is	red.		

Name	The	apple	is	big.		

Name	The	apple	is	red	and	big.	Total No. Correct

Name	red	apple	is	the	big	and	Total Number Correct

SECTION C

Math Skills

The three programs in this section are concerned with the specific activities engaged in by the teachers to teach basic mathematical skills. Ultimately, the purpose of the entire Badger staff is to provide their students, over a 15 year period of training, with all the mathematical skills necessary to function in a community living environment. Given such a responsibility, a teacher of young students cannot await the resolution of extremely complex theoretical and conceptual debatesof mathematicians or even math educators. That is, tomorrow morning at 9:00 the teacher must decide what math skills to attempt to teach, how to teach these skills, what materials to use, how to accommodate for individual differences and how to evaluate (measure) the effectiveness of the teaching program thus implemented.

The teachers and staff involved in the program reported here were confronted with such responsibilities and consequently designed and implemented the programs described below:

Program I: Number Discrimination and Labeling Program

The first program was designed with the lowest functioning children (Classroom A) as the target population. Generally, the sequence of skills the students were asked to acquire may be presented as follows:

1) Match a printed numeral to a mate which was mixed with other numeral(s).
2) Touch a specific presented numeral when given a verbal cue by the teacher.
3) Verbally label the printed numerals 1, 2, 3, 4 and 5.

The first two parts of the sequence were essentially visual and auditory discrimination and receptive language tasks. Since five of the seven students were non-verbal, it was assumed that while the students were acquiring the skills necessary for successful completion of the first two parts, and while they were receiving articulation training from the teachers in other classroom programs, they would also be acquiring the prerequisites necessary for the third part, verbally labeling the numerals. Subsequently, it was assumed that the students would be asked to perform some of the skills required of the students in the second program.

Program II: Basic Counting and Quantity Concept Program

The second program was designed for use in Classroom B which contained students who were apparently functioning at a higher level than the students of Classroom A, particularly in the area of articulation. Thus, the students of Classroom B were asked to acquire the following sequence of skills:

1) controlled rote counting
2) controlled rational counting
3) rational counting and verbally reporting the total objects counted
4) verbally labeling printed numerals

In other math programs implemented by the Badger staff, rote counting to 5 or 10 was almost always considered an important initial skill. However, the programs previously utilized to teach rote counting often presented a critical instructional difficulty. That is, other students had been taught, for instance, to rote count to "10". Subsequently, they were asked to count to "7". The typical response to the cue "count to 7" was for the student to count to 10. Often times teachers encountered some difficulty breaking the rote verbal chain. In this program the students were asked to count "through one", "through two", thus teaching the students to stop counting at the appropriate point in the chain. Hopefully, this procedure would prevent the need for a somewhat cumbersome intervention before other skills could be taught.

Program III: Teaching Rudimentary Math Concepts Involving Quantity and Size

Portions of the third program were utilized in both Classrooms (A and B) and were designed to teach rudimentary mathematical concepts involving size and quantity. The students were required to acquire the following skills:

A. Big/Little

1) Touching the big (little) stimulus of a pair of stimuli which differed only in size;
2) Touching the big (little) stimulus of a pair of stimuli (i.e. circle and square differing in size, shape, and color);
3) Verbally labeling the big (little) stimulus of a pair of stimuli differing only in size;
4) Verbally labeling the big (little) stimulus of a pair of stimuli (i.e. circle and square differing in size, shape, and color).

B. Long/Short

1) Touching the long (short) stimulus of a pair of stimuli which differed only in length;
2) Touching the long (short) stimulus of a pair of stimuli (i.e. yarn and tape differing in length, width, and color);
3) Verbally labeling the long (short) stimulus of a pair of stimuli differing only in length;
4) Verbally labeling the long (short) stimulus of a pair of stimuli (i.e. yarn and tape differing in length, width, and color).

C. One/Many

1) Touching the "one" (many) stimulus of a pair of stimuli which differed only in number;
2) Touching the "one" (many) stimulus of a pair of stimuli (i.e. paper and pencils differing in number, shape, and color);

3) Producing a quantity of blocks from a pile in response to a verbal cue.

D. Straight/Curved

1) Touching the straight (curved) stimulus of a pair of stimuli which differed only in curvature;
2) Touching the straight (curved) stimulus of a pair of stimuli (i.e. yarn and paper differing in curvature, width, and color);
3) Verbally labeling the straight (curved) stimulus of a pair of stimuli differing only in curvature;
4) Verbally labeling the straight (curved) stimulus of a pair of stimuli (i.e. yarn and paper differing in curvature, width, and color).

Finally, it should be noted and emphasized there is no sequence of math skills known to the writers that has been empirically verified as effective with severely handicapped students. Thus, teachers who desire to teach functional math skills, regardless of whether they adhere to the scripture according to Piaget, Skinner, Bruner or others are confronted with invariable instructional dilemmas. It is the intention of the writers to continue to build on programs that have been reasonably effective for use in the past,* to constantly try to devise and empirically verify new programs, and to search the literature for help from the works of others.

---

* Other math programs conducted at Badger School in the past are contained in the "Badger Books" delineated in the Introduction to this volume.

Program I: Number Discrimination and Labeling Program

Students and Materials

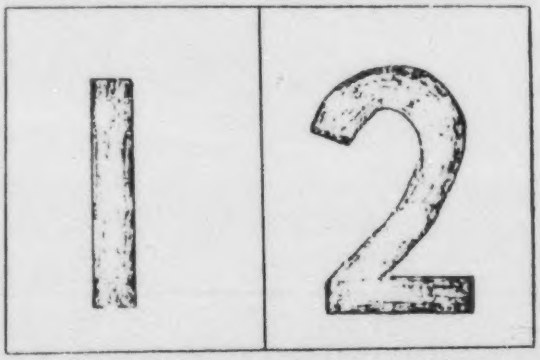
Students (Ss). Eight Ss from classrooms A and B were involved in this program and implementation of the program was arranged so that the performances of each S determined their progress through the program.

Instruction was conducted in small group arrangements; i.e., one teacher (T) to 2, 3 or 4 Ss.

Materials. The materials utilized differed between the two classrooms. The 6 Ss in classroom A were instructed with the following materials:

1) A tagboard numeral card, 4" x 6", with the numerals 1 and 2 printed in black magic marker.
2) A tagboard numeral card, 4" x 9", with the numerals 1, 2, and 3 printed in black magic marker.
3) A tagboard numeral card, 4" x 12", with the numerals 1, 2, 3 and 4 printed in black magic marker.
4) A tagboard numeral card, 4" x 15", with the numerals 1, 2, 3, 4 and 5 printed in black magic marker.
5) 5 tagboard flashcards, 4" x 3", each containing a numeral from 1-5 printed with a black magic marker.

A representation of one of the numeral cards is presented below. Note that numerals were evenly spaced, with a fine black pen line running vertically between them.



The 2 Ss in classroom B were instructed with the following materials;

1) Two sets of 4" x 3" wooden numerals, which were cut out in the shape of the numerals 1, 2, 3, 4, 5.

Although the materials varied between classrooms, the instructional sequence and procedures were essentially the same. In the continued discussion of this program, reference will be made to materials used in classroom A; however, the reader can easily convert to classroom B by simply substituting the materials used in classroom B.

Data sheets were also constructed for use in the recording of all responses. A representation of a data sheet is presented below.

Data Sheet

Numerals

Date: ____________________ Phase: ____________________

Trial: ____________________ Set: ____________________

Student Name	1	2	3	4	5	No. Correct

Task Analysis

Phase I - Matching two numbers in response to visual and verbal cues. The terminal objective is that Ss will touch an appropriate numeral when presented with a visual and verbal cue.

Set I

Teacher Cue (C)		Student Response (R)
C_1	T places the numeral card with the numerals 1 and 2 on the table in front of S. T then	R_1 S touches the numeral 1 on numeral card by placing a finger on it.

presents a flashcard with the numeral 1 on it directly centered behind the numeral card and says "S, touch 1".	
C_2 T places the numeral card (1,2) on the table in front of S and then presents a flashcard with the numeral 2 on it directly centered behind the numeral card and says "S, touch 2".	R_2 S touches the numeral 2 on numeral card.

Set II

Teacher Cue (C)	Student Response (R)
T uses same procedure as above using numeral card with the numerals 1, 2, 3 and flashcards with the same numerals.	
C_1 "Touch 1"	R_1 S touches 1
C_2 "Touch 2"	R_2 S touches 2
C_3 "Touch 3"	R_3 S touches 3

Set III

Teacher Cue (C)	Student Response (R)
T uses numeral card with the numerals 1, 2, 3, 4 and flashcards with the numerals 1, 2, 3, and 4.	
C_1 "Touch 1"	R_1 S touches 1
C_2 "Touch 2"	R_2 S touches 2
C_3 "Touch 3"	R_3 S touches 3
C_4 "Touch 4"	R_4 S touches 4

Set IV

Teacher Cue (C)	Student Response (R)
T uses numeral card with the numerals 1, 2, 3, 4, 5 and flashcards with the numerals 1, 2, 3, 4, and 5.	

C_1	"Touch 1"	R_1	S touches 1
C_2	"Touch 2"	R_2	S touches 2
C_3	"Touch 3"	R_3	S touches 3
C_4	"Touch 4"	R_4	S touches 4
C_5	"Touch 5"	R_5	S touches 5

Phase II - Touching a numeral in response to verbal cue. The terminal objective is that S will touch the appropriate numeral when presented with a verbal cue only.

Set I

	Teacher Cue (C)		Student Response (R)
C_1	T places numeral card with 1, 2 on the table in front of S. T says "Touch 1".	R_1	S touches the numeral 1 on numeral card.
C_2	T places numeral card with 1, 2 on the table in front of S. T says "Touch 2".	R_2	S touches the numeral 2 on numeral card.

Set II

	Teacher Cue (C)		Student Response (R)
C_1-C_3	Same cues, excluding visual flashcard cue, as in Set II, Phase I.	R_1-R_3	Same as in Set II, Phase I.

Set III

	Teacher Cue (C)		Student Response (R)
C_1-C_4	Same cues, excluding flashcard cue as in Set III, Phase I.	R_1-R_4	Same as in Set III, Phase I.

Set IV

	Teacher Cue (C)		Student Response (R)
C_1-C_5	Same cues, excluding visual flashcard cue, as in Set IV, Phase I.	R_1-R_5	Same as in Set IV, Phase I.

Phase III - Labeling numerals. The terminal objective for this phase is that S is to verbally label the numeral presented to him with the appropriate numeral name.

Set V

	Teacher Cue (C)		Student Response (R)
C_1	T places the numeral card with 1, 2, 3, 4, and 5 on it in front of S on table, T then points to "1" and says, "What number is this?"	R_1	"One"
C_2	T points to "2" and says "What number is this?"	R_2	"Two"
C_3	T points to "3" and says "What number is this?"	R_3	"Three"
C_4	T points to "4" and says "What number is this?"	R_4	"Four"
C_5	T points to "5" and says "What number is this?"	R_5	"Five"

Set VI

	Teacher Cue (C)		Student Response (R)
C_1-C_5	Same cues as Phase III, Set V with the exception that cues were presented randomly. That is, 2, then 4, then 1, etc.	R_1-R_5	Same as in Phase III, Set V.

Set VII

	Teacher Cue (C)		Student Response (R)
C_1	T presents S a flashcard with the numeral "2" on it and says "What number is this?"	R_1	"Two"
C_2-C_5	T presents the rest of the five flashcards in the same fashion - each time saying "What number is this?"	R_2-R_5	Appropriate responses - "three", "one", "five", "four".

Teaching Procedures

Phase I - Procedures used to teach numeral matching with visual and verbal cues.

Step I - Baseline and teaching procedure.

Prior to teaching, baseline measurement was instituted to determine each S's ability to match the numerals 1, 2 (Phase I, Set I). The procedure used is as follows:

1) T presented the numeral card with the numerals 1, 2 in front of S_1 on the table. T then presented a cue card with one of the two numerals on it and centered it behind the response card on a vertical plane. T then said, "S_1, touch (numeral on card)". Regardless of S_1's response, T said "Thank you", recorded a "+" for a correct response or "-" for an incorrect response or "/" for no response and presented a different numeral card, numeral cue card, and cue to S_2, etc.
2) T used the same procedure described above until each S had the opportunity to respond to both of the two cues (1, 2) on 3 consecutive occasions.

Once baseline measures of each S's ability to match the numerals (1, 2) were obtained, T began to teach this skill using the following procedure:

1) T placed a numeral card with the numerals "1" and "2" printed on it, in front of S_1 on the table. T then presented the cue card with the numeral "1" printed on it and centered it behind the numeral card. T then said "S_1, touch one". If S_1 touched the numeral "1" on the response card, T smiled, said "Great, etc.", provided a consequence (usually a consumable in the form of cereal or water), recorded a correct response on the data sheet, and presented a different numeral card and cues to S_2, etc.

2) If $\underline{S}_1$ did not touch the numeral "1" on the numeral card, T said "No", repeated the verbal cue, "Touch one" and demonstrated (modeled) the correct response by touching "1" on the numeral card. T then said, "$\underline{S}_1$, touch one". If $\underline{S}_1$ imitated T's demonstration and touched "1" on the numeral card, T smiled, said "Great, etc.", recorded an "M" on the data sheet and presented a different numeral card and cues to $\underline{S}_2$, etc.

3) If $\underline{S}_1$ did not imitate T's demonstration, T said "No", repeated the cue, "$\underline{S}_1$, touch one" and primed the response by physically guiding $\underline{S}_1$'s hand to the numeral "1" on the numeral card. When $\underline{S}_1$ completed the touching response with T's prompting, T smiled, said "Great, etc.", recorded a "P" on the data sheet, and presented a different numeral card and cues to $\underline{S}_2$, etc. T reduced (faded) the amount of physical prompting of $\underline{S}_1$ on subsequent trials until $\underline{S}_1$ performed the correct touching response as an imitation of T. Subsequently, imitations were faded.

4) The procedures described in 1, 2, 3 above were followed until an S made 3 consecutive correct responses to each of the two numeral cards in Set I (1, 2) without the assistance of priming or imitative cues.

It should be noted that T tried to avoid presenting a numeral cue twice in succession but occasionally this did occur.

Step 2 - Baseline and teaching procedures.

T used the baseline procedures described in Step 1 to measure each Ss initial ability to match the numerals 1, 2, 3 (Set II). Each S responded to each of the numeral cues, 1, 2, 3 on three consecutive occasions.

The teaching procedures described in Step 1 were used by T for the set containing the numerals 1, 2, 3. The procedure was followed until an S made 3 consecutive correct responses to each of the three numerals in Set II (1, 2, 3) or a total of 9 consecutive correct responses.

Step 3 - Baseline and teaching procedures.

T used the baseline procedures described in Step 1 to determine each S's initial ability to match the numerals 1, 2, 3, 4 (Set III) until each S responded to each of the four numeral cues (1, 2, 3, 4) on three consecutive occasions.

The teaching procedures described in Step 1 were used by T for Set III (1, 2, 3, 4) until a total of 12 consecutive correct responses occurred.

Step 4 - Baseline and teaching procedures.

T used the baseline procedures described in Step 1 to determine each S's ability to match the numerals 1, 2, 3, 4, and 5 (Set IV) after completing Steps 1, 2, and 3 above until each S responded to each of the five numeral cues (1, 2, 3, 4, 5) on three consecutive occasions.

The teaching procedures described in Step 1 were implemented by T for Set IV (1, 2, 3, 4, 5), until an S made 3 consecutive correct responses to each of the five numerals in Set IV (1, 2, 3, 4, 5), or a total of 15 consecutive correct responses.

Phase II - Procedures used to teach touching of numerals in response to verbal cues. The same instructional sequence and procedure as described in Phase I were used here. The only difference in the baseline and teaching procedures was that the visual cues (numeral cues) were not presented to Ss. The same numeral cards were used and the verbal cue remained, "S, Touch (numeral)."

Phase III - Procedures used to teach numeral labeling.

Step 1 - Baseline and teaching procedures.

Prior to teaching, baseline measures were obtained to determine each S's ability to label the numerals 1-5: 1) on the numeral card when cues were presented in serial order; 2) on the numeral card when cues were presented randomly; and 3) on the flashcards, when cues were presented randomly. The following baseline procedures were used:

1) T presented the numeral card with the numerals 1, 2, 3, 4, 5 and placed it in front of S_1 on the table. T then touched the numeral "1" and said, "S_1, what number is this?". Regardless of S_1's response, T said "Thank you", recorded the response as "+" or "-" and presented a different numeral cue to S_2, etc.
2) T used the same procedure described above until S_1 responded to each of the five numerals (1, 2, 3, 4, 5) on three consecutive trials.

These baseline procedures were followed until each had the opportunity to label each of the numerals on the numeral card in serial _and_ random order on three consecutive occasions. Baseline measures of S's ability to label the 5 numerals on the 5 numeral cards were obtained as follows:

1) T presented a card with a numeral (1, 2, 3, 4, 5) on it to S_1. T then said, "What number is this?". Regardless of S_1's response, T said "Thank you", recorded the response as "+" or "-" and presented a different numeral card to S_2, etc. (numeral cards were randomly presented).
2) T used the above procedure until S_1 responded to each of the five numeral cards on three consecutive occasions.

After baseline measures had been obtained T began to teach Ss to label the numerals on the numeral card. Teaching was conducted as follows:

1) T presented the numeral card with the numerals 1, 2, 3, 4, 5 and placed it in front of S_1. T then touched "1" and said, "S_1, what number is this?". If S_1 said "one", T smiled, said "Great", consequated with a consumable, recorded a correct response and asked S_2 to label a different numeral, etc.
2) If S_1 did not respond correctly or failed to respond, T said "No", repeated the cue, "What number is this?", said "one" "this is one" (T touches 1). Then T repeated the cue, "S_1, what number is this?".

If S_1 imitated T and verbally said "one", T said "Great", recorded an "M" and presented a different cue to S_2, etc.

3) If S_1 did not imitate T's initial verbal model of the correct response, T would repeat the procedure described in 2 above. If S_1 again failed to imitate T's model, T would terminate S's trial and go on to S_2, etc.

4) The procedures described in 1, 2, 3 above were followed until an S correctly labeled each of the five numerals (1, 2, 3, 4, 5) on the numeral card on three consecutive occasions.

Subsequently, the same procedures were used to teach Ss to label the numerals on the numeral card in random order and then to label the numerals on the flashcards.

RESULTS

The performance of the 8 Ss is summarized in Table 1. However, the detailed performances of only Ss 4, 6, and 8 are presented graphically. It appeared that the results of these three Ss represented 3 types of performance patterns exhibited by the 8 Ss. The three performance patterns may be characterized as follows:

1) Ss (5, 6, and 8) who failed to reach criterion or who reached criterion on only the first few tasks required in Phase I.
2) Ss (1, 2, and 14) who performed at criterion on Phase I tasks but did not perform at criterion on all Phase II tasks.
3) Ss (3 and 4) who performed at (or almost at) criterion on Phases I, II and III.

Table 1

PHASES

	I					II					III		
	Sets					Sets					Sets		
	I	II	III	IV		I	II	III	IV		V	VI	VII
*S_8													
S_6	X												
S_5	X	X											
S_2	X	X	X	X									
S_1	X	X	X	X		X							
*S_{14}	X	X	X	X		X	X	X					
S_4	X	X	X	X		X	X	X	X		X	X	
S_3	X	X	X	X		X	X	X	X		X	X	X

* Both Ss 8 and 14 were taught with 3 dimensional wooden numerals. Ss 1 & 6 were taught with tagboard numeral cards and flashcards. X = sets on which Ss reached a criterion of perfect responding on 3 consecutive trials.

S_6

The performance of S_6 was selected as representative of those Ss who did not reach criterion on the tasks of Phase I. In Phase I Ss were required to match two numerals with the assistance of visual and verbal cues. The initial baseline of Phase I measured the ability of S_6 to match one numeral to a mate contained in a set of 2 (Set I). It can be discerned from Figure IA (trials 1, 2, 3) that S_6 made only 4 of a possible 6 correct responses during the three trial baseline period. Further inspection of Figure IA reveals the relatively inconsistent performance pattern manifested by $\underline{S}_6$ and that criterion (9 consecutive correct responses) on Set I was not reached until 41 teaching trials were completed.

When $\underline{S}_6$ reached criterion on Set I, baseline measures of the ability of $\underline{S}_6$ to match one numeral to a mate in a set of 3 were obtained (Set II). It can be discerned from Figure 1B (trials 1-3) that $\underline{S}_6$ made 5 of a possible 9 correct responses during the baseline trials and that after 35 teaching trials (by end of the school year) $\underline{S}_6$ had not reached the criterion of 9 correct consecutive responses.

$\underline{S}_{14}$

The performance of $\underline{S}_{14}$ was selected as representative of those $\underline{S}$s who reached criterion on all of the sets of Phase I (matching numerals from visual and verbal cues) but who did not perform at criterion level on all the sets of Phase II (touching numeral from a verbal cue). It should be noted that $\underline{S}_6$, whose performance was presented above, was a member of Classroom A, and that $\underline{S}_{14}$ whose performance will be presented here was a member of Classroom B. The program design and instructional materials used in Classroom B were slightly different from those used in Classroom A. In Classroom B, prior to instruction, two trials of baseline measures were obtained on the four sets of Phase I. $\underline{S}_{14}$ was then taught to perform at a criterion level of 3 consecutive perfect trials on Set I and a total of 9 teaching trials were required.

Subsequent to criterion performance on Set I, baseline measures were again obtained on Sets I, II, III and IV (See Figure 2A, B, C, D - trials 12, 13). During the second baseline period criterion performance was maintained on Set I, and performance improved dramatically on Sets II and III. Obviously, the teaching of Sets II and III was unnecessary as $\underline{S}_{14}$ acquired the necessary skills without direct instruction.

However, instruction was required on Set IV and $\underline{S}_{14}$ reached criterion after 13 teaching trials.

In Phase II baseline measures of the ability of $\underline{S}_{14}$ to touch the numerals from a verbal cue were obtained on Sets I, II, III and IV (Figure 2E, F, G, H). During the baseline period (trials 1, 2) $\underline{S}_{14}$ performed perfectly and thus teaching was not required for Set I and teaching was initiated on Set II. As can be discerned from Figure 2F a total of 29 teaching trials were required before $\underline{S}_{14}$ reached criterion.

Subsequently, baseline measures were again obtained on Sets II, III and IV (trials 32, 33). As can be discerned from Figure 2F the prior criterion responding of $\underline{S}_{14}$ was not maintained. Then, a new criterion of 15 consecutive correct responses was set and instruction was reinstituted on Set II. A total of 37 teaching trials were required to obtain criterion responding.

When $\underline{S}_{16}$ reached criterion on Set II, instruction was initiated on Set III. As can be discerned from Figure 2G a total of 23 teaching trials were required to reach a criterion of 12 consecutive correct responses (trials 71-93).

Subsequently, baseline measures were obtained on Sets II, III and IV (trials 94, 95). As can be discerned from Figures 2F, G, and H criterion responding was maintained on Sets II and III and performance improved substantially on Set IV.

Unfortunately, time in the school year permitted only eight teaching trials on Set IV.

$\underline{S}_4$

The performance of $\underline{S}_4$ will be presented graphically to represent the third type of performance pattern: $\underline{S}$s who completed (or almost completed)

Phases I, II, and III. $\underline{S}_4$'s performance on Phase I (matching two numerals with the assistance of visual and verbal cues) is depicted in Figure 3A, B, C, D. The initial baseline measured the ability of $\underline{S}_4$ to match one numeral to a mate contained in a set of 2 (Set I). $\underline{S}_4$ performed perfectly during the three baseline trials as can be discerned from Figure 3A (trials 1, 2, 3). $\underline{S}_4$ then made 7 of 9 possible correct responses during the three trial baseline of Set II (See Figure 3B). Further inspection of Figure 3B shows that 9 teaching trials were necessary for $\underline{S}_4$ to reach criterion of 9 consecutive correct responses on Set II (matching one numeral to a mate contained in a set of 3).

Inspection of Figure 3C reveals that $\underline{S}_4$ performed perfectly on the 3 trial baseline of Set IV (matching one numeral to a mate contained in a set of 4). The performance of $\underline{S}_4$ on matching one numeral to a mate contained in a set of 5 (Set IV) is presented in Figure 3D. It can be discerned that $\underline{S}_4$ made 8 of a possible 15 correct responses on the three trial baseline of Set IV. Then, only 6 teaching trials were required for $\underline{S}_4$ to reach criterion on Set IV.

Figures 3E, F, G, and H depict $\underline{S}_4$'s performance on Phase II (touching a numeral from a verbal cue). The initial baseline of Phase II measured the ability of $\underline{S}_4$ to touch a numeral with verbal cue only in a set of 2 (Set I). It can be discerned from Figure 3E that $\underline{S}_4$ made 5 of a possible 6 correct responses on a three trial baseline (trials 1, 2, 3). Thus, it was felt that teaching was not necessary for Set I. On the three trial baseline of Set II (Figure 3F) $\underline{S}_4$ made 8 of a possible 9 correct responses and again teaching was not necessary. On the baseline of Set III, $\underline{S}_4$ made 6 of a possible 12 correct responses on the three baseline trials (Figure 3G) and 10 teaching trials were required before $\underline{S}_4$ reached criterion on Set III (a total of 12 consecutive correct responses). Inspection of Figure 3H reveals that $\underline{S}_4$ responded perfectly on the three trial baseline of Set IV.

During Phase III (Figure 3I) $\underline{S}_4$ was required to verbally label the numerals 1 through 5. The initial baseline measured the ability of $\underline{S}_4$ to label the numerals 1 through 5: A) on the numeral card with cues presented in serial order (Set V); B) on the numeral card with cues presented randomly (Set VI); and C) on flashcards with cues presented randomly (Set VII). It can be discerned from Figure 3I that $\underline{S}_4$ made 10 of a possible 15 correct responses on Set V, 7 of a possible 15 correct responses on Set VI, and 5 of a possible 15 correct responses on Set VII during the three trial baseline (trials 1, 2, 3). Instruction was then initiated on Set V and $\underline{S}_4$ reached criterion after 12 teaching trials (trials 4-15). Then baseline measures were again obtained on Sets V, VI, and VII. Inspection of Figure 3I reveals that $\underline{S}_4$ maintained correct responding on Set V during the second baseline (trials 15, 17, 18). The performance of $\underline{S}_4$ on Set VI increased dramatically in that $\underline{S}_4$ responded perfectly. Also during this baseline $\underline{S}_4$ made 7 of a possible 15 correct responses on Set VII. At the end of the school year, 9 teaching trials were completed on Set VII (trials 19-27). Although $\underline{S}_4$ had not reached the criterion of 15 consecutive correct responses, inspection of Figure 3I reveals that $\underline{S}_4$ had made 10 consecutive correct responses and quite probably will reach criterion in the coming academic year and then progress to more sophisticated math activities.

FIGURE 1A

Matching Similar Numerals
(S_3)

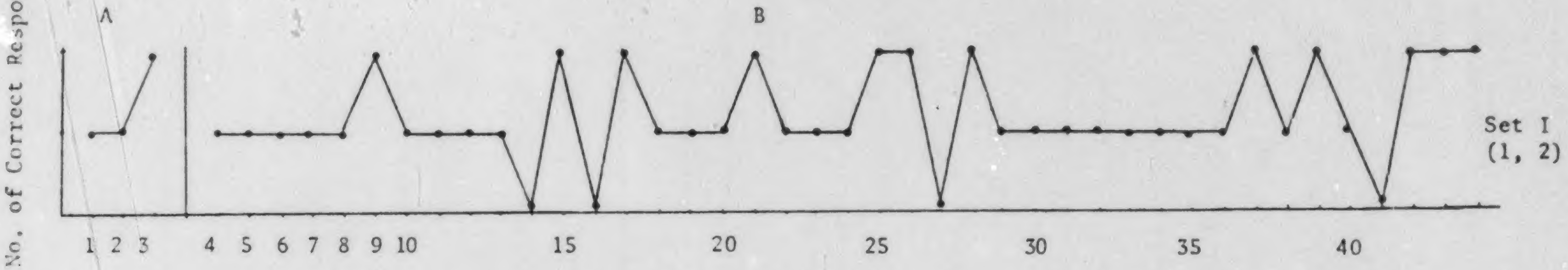
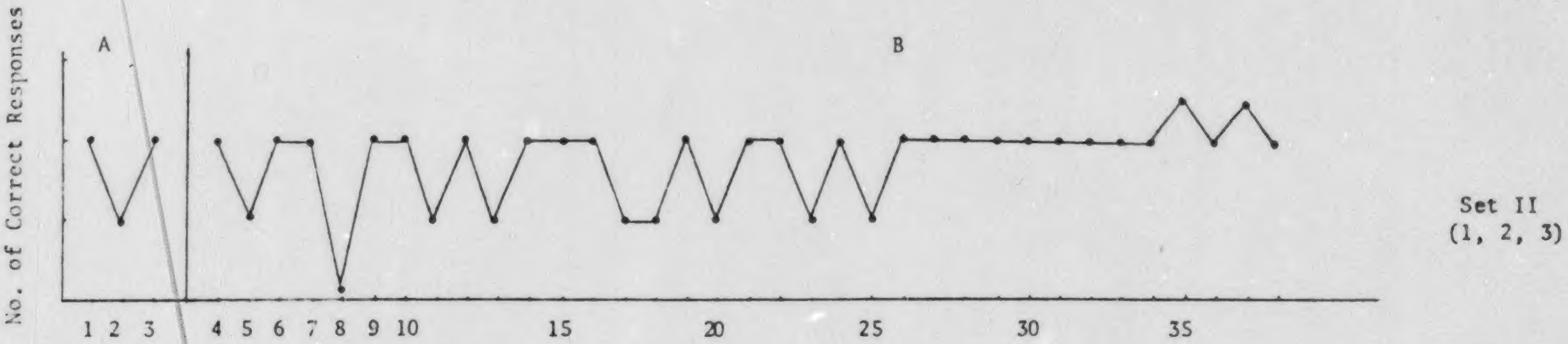


FIGURE 1B



Trials

A - Baseline
B - Teaching

FIGURE 2A

Matching Similar Numbers

(S_{14})

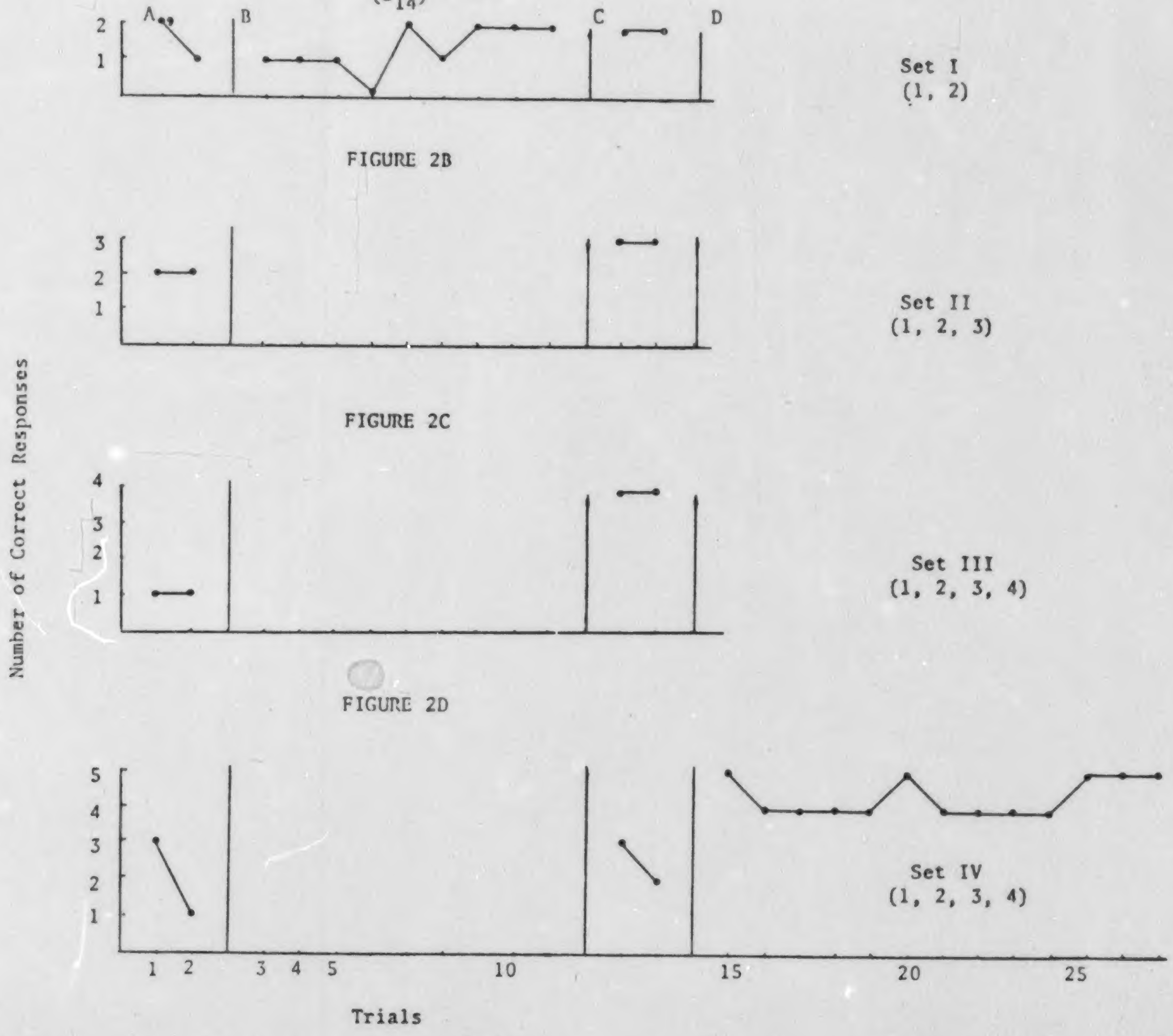


FIGURE 2B

FIGURE 2C

FIGURE 2D

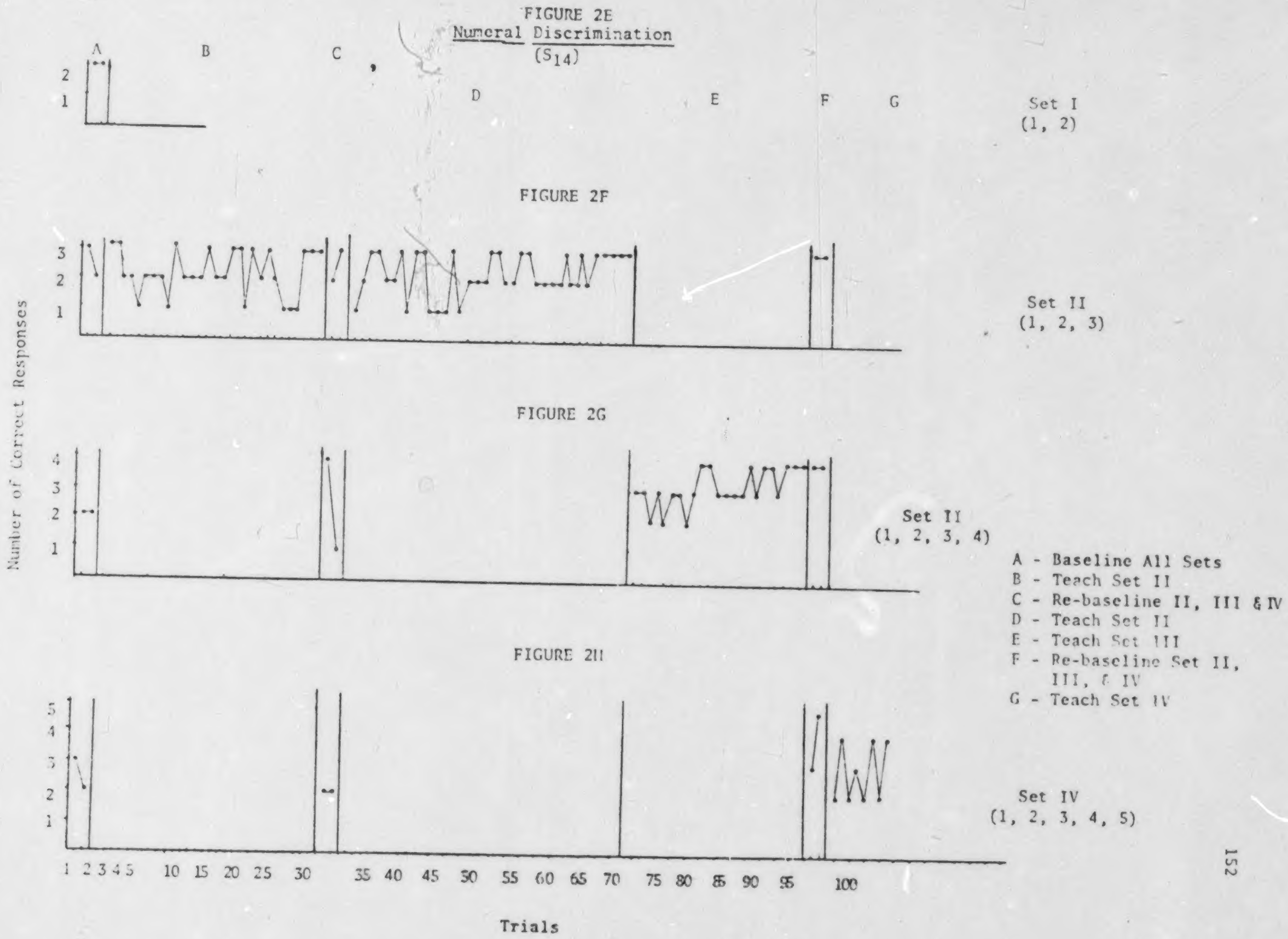


FIGURE 2E

Numeral Discrimination

(S_{14})

FIGURE 2F

FIGURE 2G

FIGURE 2H

FIGURES 3A, 3B, 3C, & 3D (Phase I)
Matching Similar Numerals
(S_4)

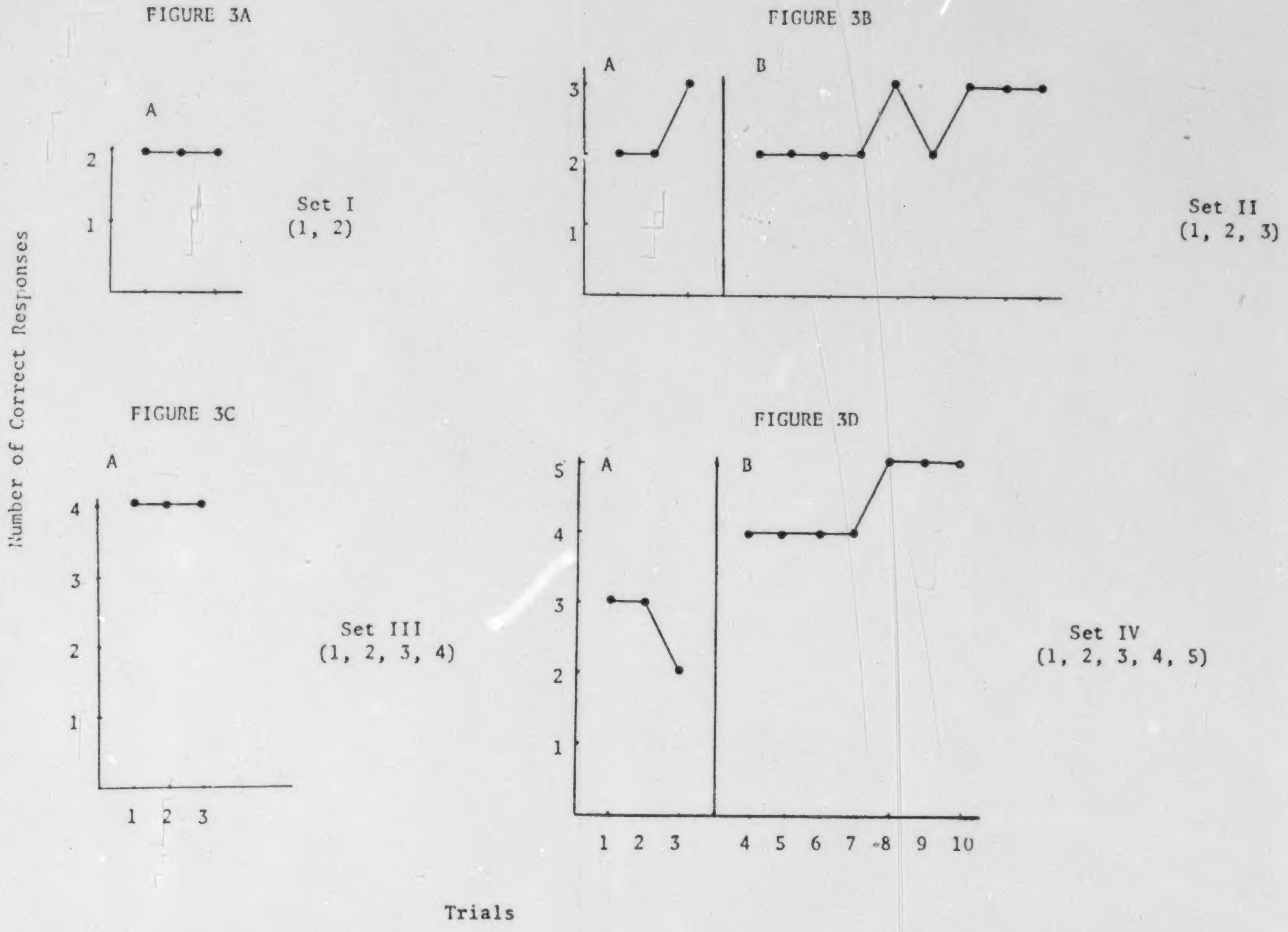


FIGURE 3A

FIGURE 3B

FIGURE 3C

FIGURE 3D

FIGURES 3E, 3F, 3G, & 3H (Phase II)
Touching Numerals
(S_4)

FIGURE 3E

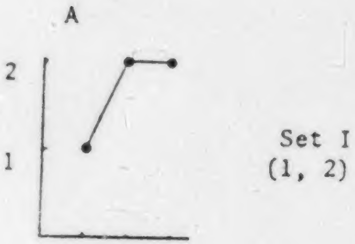


FIGURE 3F

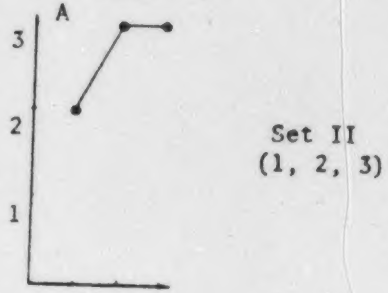


FIGURE 3G

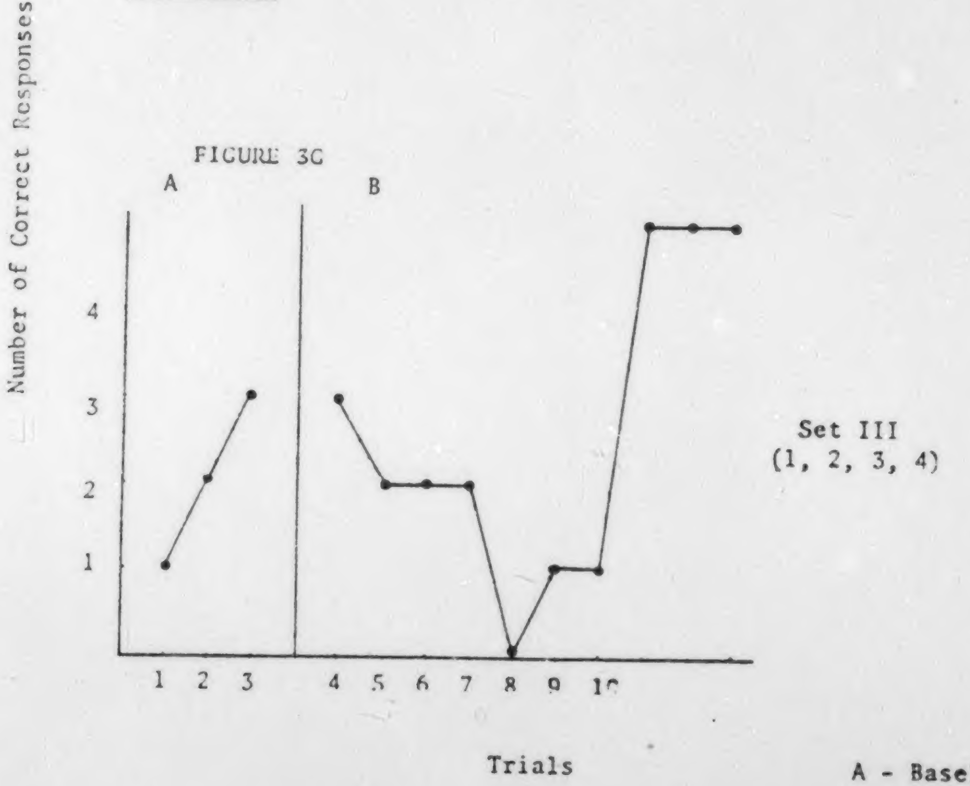
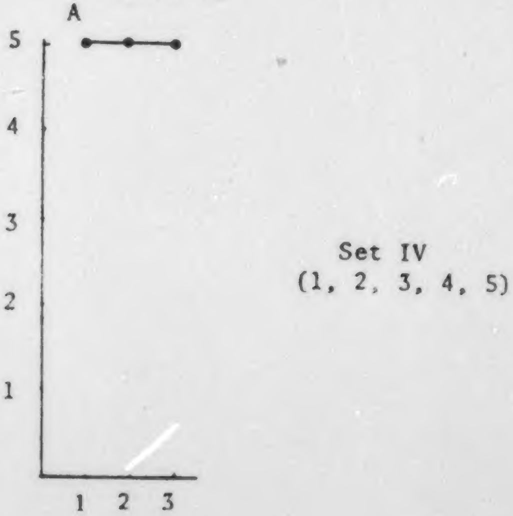
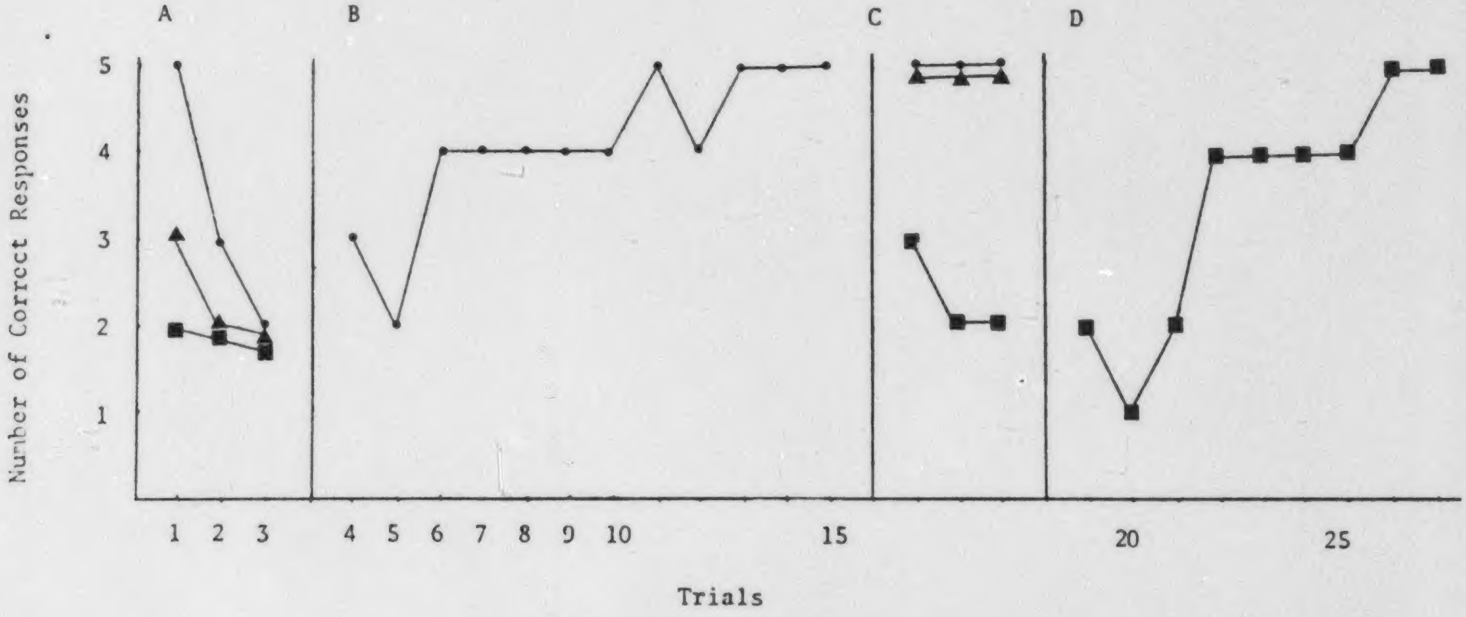


FIGURE 3H



A - Baseline
B - Teaching

FIGURE 3I (Phase III)
Labeling Numerals
(S_4)



A - Baseline Sets V, Set VI, & Set VII
B - Teach Set V
C - Re-baseline Set V, Set VI, & Set VII
D - Teach Set VII

Set V
Labeling Numerals on Card - In Order
Set VI
Labeling Numerals on Card - Out of Order
Set VII
Labeling Numerals on Flashcards - Out of Order

Program II: Basic Counting and Quantity Concept Program

Students (Ss)

The 6 Ss in Classrooms A and B who, in the judgment of the teachers, manifested the most developed expressive language and articulation skills were involved in this program. The program was designed and implemented so that progression through the steps of the program was determined by the performance of individual Ss. Instruction was conducted in small groups of one T to 2, 3, or 4 Ss. At times at least 2 Ss in a particular group were involved in different tasks.

Materials

The materials used in this program were as follows:

1) Five 4" x 5" pieces of manilla tagboard (numeral cards) each one contained a numeral from 1-5 printed in black magic marker;
2) The pegboards and pegs from Ideal's Peg-It-Numbers;
3) Pieces of cereal for consequences;
4) Data sheets which provided space for date, phase, set, cue, name, trial number and total number correct responses. Sample data sheets are presented at the end of this program.

Instructional Sequence

Phase I - Counting	Task
Set I	Counting through 1
Set II	Counting through 2
Set III	Counting through 3
Set IV	Counting through 4
Set V	Counting through 5
Set VI	Counting through 6

Set VII	Counting through 7
Set VIII	Counting through 8
Set IX	Counting through 9
Set X	Counting through 10

Phase II - Rational Counting	Task
Set I	Counting 1 peg
Set II	Counting 2 pegs
Set III	Counting 3 pegs
Set IV	Counting 4 pegs
Set V	Counting 5 pegs

Phase III - Rational Counting and Verbal Reporting of Quantities	Task
Set I	Counting 1 peg; reporting how many
Set II	Counting 2 pegs; reporting how many
Set III	Counting 3 pegs; reporting how many
Set IV	Counting 4 pegs; reporting how many
Set V	Counting 5 pegs; reporting how many

Phase IV - Numeral Labeling	
Set I	Verbally labeling the numerals 1, 2, 3, 4, and 5 which were printed on the pegboards.
Set II	Verbally labeling the numerals 1, 2, 3, 4, and 5 which were printed on numeral cards.

It should be noted that baseline measures of the tasks required in Phases II, III and IV were obtained after an S reached criterion on Set V of Phase I. It should be further noted that while Sets VI-X of Phase I were being taught, the tasks of Phase II (described below) were being taught at a different time in the school day.

Baseline Procedures

The baseline measures of Phases I-IV were obtained in the following manner:

Phase I - Counting. *Ss* were seated in a semi-circle facing *T*. *T* said to S_1, "S_1 count through (*1*)". After S_1 responded *T* said "Thank you" giving no indication to S_1 whether or not the response was correct. *T* then recorded the response appropriately on the data sheet and presented a different verbal cue to S_2, "S_2 count through (*2*)" etc. The ten sets of Phase I were baselined in the above manner before teaching began on Set I. Baseline measures of Phases II, III, IV were obtained when *Ss* reached criterion on Set V of Phase I.

Phase II - Rational Counting. Baseline measures of Phase III tasks were obtained before Phase II because Phase III involved more difficult rational counting skills. This procedure was used in an attempt to minimize the occurrence of incidental learning during the baselines of Phase II that might distort performance on the initial baselines of Phase III. This would also provide a procedure to measure generalization occurring from the tasks of Phase II to the tasks of Phase III.

T placed either 1, 2, 3, 4, or 5 pegs on the table directly in front of S_1 and said, "S_1 count the peg(s)". After S_1 responded *T* said "Thank you" giving no indication whether or not the response was correct or incorrect and recorded the response appropriately on the data sheet. S_2 was then presented with a different number of pegs to count, etc. The five sets of Phase II were baselined in the above manner.

Phase III - Rational Counting and Verbal Reporting of Quantities. Baseline measures of Phase III tasks were obtained in the same manner as those of Phase II except that after *Ss* were presented with a quantity of pegs, and told to "Count the pegs" they were also asked, "How many?".

Phase IV - Numeral Labeling. The tasks of Phase IV were baselined before the teaching began on Phase II. A primary rationale for this maneuver was to attempt to delineate generalization of skills across phases. The baseline measures were obtained as follows:

T held one numeral card directly in front of S_1, at eye level and said, "S_1 what number is this?". After S_1 responded T said "Thank you" not indicating whether or not the response was correct and recorded the response appropriately on the data sheet. S_2 was then presented a different numeral to label, etc.

Set II baseline measures were obtained using the same procedures as Set I.

Teaching Procedures

Phase I - Counting. Phase I was designed to teach rote counting through 10. The steps in the teaching procedures were as follows:

1) Ss were seated in a semi-circle facing T who said, "S_1 count through (1)". If S_1 counted correctly T smiled, said "Good, etc.", provided a consumable consequence, recorded a correct response (+) on the data sheet, and presented a different cue to S_2, etc.

2) If S_1 did not respond or counted incorrectly T said "No", repeated the cue "S_1 count through (1)", and modeled the correct response "1". T again repeated the cue. If S_1 counted correctly imitating the model, T smiled, said "Good, etc.", did not provide a consumable, and recorded "M_1" (first model) on the data sheet. S_2 would then be given a different cue, etc.

3) If S_1 did not respond or counted incorrectly T said "No", and repeated the cue "S_1, count through (1)". T then modeled the correct response "1" and said "S_1, say what T said, "1". (In the case of Set II etc.,

for example, T would say "S_1, say what T said, "1", S_1 would respond "1", T would then say "2" and S_1 would respond "2"). If S_1 correctly imitated the counting model, T would provide only social consequences and record "M_2" (second model) on the data sheet. S_2 would then be given a different cue, etc.

4) If S_1 did not respond or did so incorrectly T said "No, 1" and terminated the turn. A different cue would then be given to S_2, etc.

Teaching was continued until the modeling cues were faded and S responded correctly on 3 consecutive occasions on Set I. Teaching was then initiated on Set II.

It should be noted that in Set II, for example, the only correct response could be "one, two". However, if a S said nothing, one, or two, these responses were recorded. This method of recording and ultimately graphing was used throughout the program.

The teaching procedure above was used for four Ss (9, 11, 12, and 13) on Sets I through V. On the sets that remained (VI through X) a slightly modified procedure was used. The modified procedure was also used for 2 Ss (3 & 4) on Sets I through V. In this procedure a number of extra cues were provided by T. The extra cues included: T projecting her fingers as S counted; tapping S's knee as he counted, or T rehearsing Ss as a group. The extra cues were faded before Ss reached criterion on a particular set but the cue "S_1 count through (1)" was never changed. Although such extra cues made it impossible to identify the variables leading to S's success, T hypothesized that criterion performance might have been facilitated with the extra cues and practice.

Phase II - Rational Counting. Phase II was designed not only to teach rational counting but also, through incidental learning, to teach approximation of numeral discrimination and labeling. Instead of using tangible consequences Ss were allowed to put the pegs they had correctly counted into a pegboard that had the exact number of holes as S had pegs. While T was pointing to the numeral on the board, T would say for example, "You did a good job counting, you may put the 3 pegs in the board, etc." Indirectly, of course, T was labeling the numeral 3 for S. The procedure for Phase II is as follows:

1) T placed 1, 2, 3, 4, or 5 pegs on the table directly in front of S_1 and said "S_1 count the peg(s)". If S_1 responded correctly, T smiled, said "Good, etc.", allowed S_1 to put the pegs in the pegboard and recorded a correct response (+) on the data sheet. A different quantity was then placed in front of S_2, etc.

2) If S_1 did not respond or counted the peg(s) incorrectly T said "No", repeated the cue, "S_1 count the peg(s)", and verbally modeled the correct response "1" as S_1 touched the peg.* If S_1 correctly imitated the verbal model T smiled, said "Good, etc.", but S_1 was not allowed to put the peg(s) in the board. T then recorded an "M_1" on the data sheet and placed a different quantity in front of S_2, etc.

3) If S_1 did not respond or counted incorrectly T said "No", repeated the cue, "S_1 count the peg(s)" and "S_1 count through 1". (A task learned in Phase I above) As S_1 counted T touched the respective peg(s). If S_1 counted correctly T would provide only social consequences, record "M_2" on the data sheet and place a different quantity of pegs in front of S_2, etc.

4) Instruction continued until S_1 responded correctly on 3 consecutive occasions without assistance.

Phase III - Rational Counting and Quantity Set Concepts. While serving as a review of rational counting (Phase II) and an opportunity to acquire number discrimination and labeling skills through incidental learning, Phase III also attempts to teach the $\underline{S}$s that objects may be conceptualized as a quantity or set by asking the question "How many?". The teaching procedures were as follows:

---

* Ss were not required to touch the pegs as they counted, if they were successful without doing so.

1) $\underline{T}$ placed the peg(s) directly in front of $\underline{S}_1$ on the table and said "$\underline{S}_1$ count the pegs". (This task was taught in Phase II above, if $\underline{S}_1$ had experienced difficulty, the teaching procedures would have been the same as those used in Phase II). After $\underline{S}_1$ counted the pegs $\underline{T}$ said "$\underline{S}_1$, how many?". If $\underline{S}_1$ responded correctly $\underline{T}$ smiled, said "Good, etc.", and allowed $\underline{S}_1$ to put the pegs in the board. $\underline{T}$ then recorded a correct response and presented a different quantity of peg(s) to $\underline{S}_2$, etc.
2) If $\underline{S}_1$ did not respond or incorrectly stated how many pegs were presented, $\underline{T}$ said "No", repeated the cue "$\underline{S}_1$, how many?" and verbally modeled the response "1". The cue was then repeated. If $\underline{S}_1$ responded correctly $\underline{T}$ smiled, said "Good, etc.", did not allow $\underline{S}_1$ to put the peg(s) in the board and recorded an "M_1" on the data sheet. $\underline{S}_2$ was then presented the peg(s) to $\underline{S}_2$, etc.
3) If $\underline{S}_1$ did not respond or still did so incorrectly $\underline{T}$ said "No", repeated the cue, "$\underline{S}_1$, how many?" and said "$\underline{S}_1$ say 1". If $\underline{S}_1$ responded correctly $\underline{T}$ provided only social consequences and recorded "M_2" on the data sheet.
4) If $\underline{S}_1$ did not respond or did so incorrectly $\underline{T}$ said "No" and terminated the turn. A peg(s) was then presented to $\underline{S}_2$, etc.
5) Teaching was continued until the modeling cues were faded and $\underline{S}_1$ responded correctly on 3 consecutive occasions to the cue "$\underline{S}_1$ count the pegs" and "$\underline{S}_1$, how many?".

Phase IV - Numeral Labeling. It was hoped that through experiences in Phases I, II and III, incidental learning of related numeral labeling skills would have occurred and that the skills required in Phase IV would not have to be taught. In the necessity that it be taught the teaching procedures are as follows:

1) $\underline{T}$ held at $\underline{S}$'s eye level a numeral card and said, "$\underline{S}_1$, what number is this?". If $\underline{S}_1$ correctly labeled the numeral card $\underline{T}$ smiled, said "Good, etc.", provided a tangible consequence, recorded on the data sheet a correct response, and provided a different card to $\underline{S}_2$, etc.
2) If $\underline{S}_1$ did not respond or did so incorrectly $\underline{T}$ said "No", repeated the cue "$\underline{S}_1$, what number is this?" and modeled the correct response ("1", "2", "3", "4", or "5"). The cue was again repeated. If $\underline{S}_1$ responded correctly $\underline{T}$ smiled, said "Good, etc.", did not provide a consumable consequence and recorded "M_1" on the data sheet. $\underline{S}_2$ was presented with another numeral card, etc.
3) If $\underline{S}_1$ did not respond or did so incorrectly $\underline{T}$ said "$\underline{S}_1$ say "1" ("2", "3", "4", or "5"). If $\underline{S}_1$ correctly imitated the model, $\underline{T}$ provided only social consequences, recorded "M_2" on the data sheet, and presented a different numeral card to $\underline{S}_2$, etc.
4) If $\underline{S}_1$ did not respond or did so incorrectly, $\underline{T}$ terminated the trial and presented a different numeral card to $\underline{S}_2$, etc.
5) When $\underline{S}$ responded correctly on 3 consecutive trials with each trial consisting of 5 responses, instruction was terminated.

The same procedures described above would be used for both the numeral cards and the pegboards.

Results

A summary of the performance of all 6 $\underline{S}$s is presented in Table 1.

Table 1

	Phase I										Phase II					Phase III					Phase IV	
Student Number	I	II	III	IV	V	VI	VII	VIII	IX	X	I	II	III	IV	V	I	II	III	IV	V	I	II
3	X	X	X	X	X																	
4	X	X	X	X	X																	
12	X	X	X	X	X	X					X	X	X									
13	X	X	X	X	X	X					X	X	X									
9	X	X	X	X	X	X	X				X	X	X									
11	X	X	X	X	X	X					X	X	X	X	X	X					X	X

X = Steps completed in Phases I, II, III and IV.

However, before Table 1 is examined in detail the following points should be reviewed:

1) All 6 Ss were taught to perform at criterion on Sets I through V of Phase I (counting).
2) When an S reached criterion on Sets I through V of Phase I, instruction on Phase II was initiated during one part of the day. Instruction on Sets VI through X of Phase I was initiated during another part of the day. Thus, instruction on the tasks required in Phases I and II was issued concomitantly.
3) When an S reached criterion on the Sets I through V of Phase I and the five sets of Phase II, instruction on the tasks required in Phases III and IV was initiated.

As can be discerned from Table 1, all 6 Ss were taught to rote count at least through 5; 3 Ss were taught to rationally count through 3; and one S was taught to rationally count through 5, verbally report the quantity of one and labeled the numerals 1 through 5 on both the pegboard and the numeral cards.

Inspection of Table 1 might provide the reader with the impression that all Ss received the same amount of instruction, but that some Ss progressed faster than others. In reality, this does not seem to be valid. Instruction with some Ss was not initiated until mid-year, and some Ss missed substantial amounts of time for medical reasons. In fact, individual performance patterns which will not be presented here strongly suggest that the number of teaching trials required to reach criterion on most steps under instruction varied little.

Comment

Phases II through V were introduced late in the school year. Thus, due to a lack of time, instruction on those Phases with most students was not initiated. However, hopefully, the procedures as they are described above will be implemented next year.

Sample of Data Sheet for Phase I - Rote Counting

Date: ____________ Phase: I Set: VI Cue: "Count through 6"

Name	Trial	1	2	3	4	5	6	No. Correct
	1							
	2							
	3							
	4							

Sample of Data Sheet for Phase II - Rational Counting

Date: ____________ Phase: II Set: V Cue: "Count the pegs"

Name	Trial	1	2	3	4	5	No. Correct
	1						
	2						
	3						
	4						

Sample of Data Sheet for Phase III - Rational Counting and Quantity Set Concepts (1-5)

Date: ____________ Phase: __________ Set: __________ Cue: ________________

Name	Trial	A*	B*	A	B	A	B	A	B	A	B	A No. Correct	B No. Correct
	1												
	2												

Sample of Data Sheet for Phase IV - Numeral Labeling

Date: ____________ Phase: __________ Set: __________ Cue: ________________

Name	Trial	1	2	3	4	5	No. Correct

*A - "Count the peg(s)"　　*B - "How many?"

Program III Rudimentary Concepts Involving Quantity and Size Program

The development of rudimentary concepts involving quantity and size has been considered by theorists (Piaget) and curriculum designers (Malloy, 1972; Sheperd, Wyrick & Bilyeu, 1970) as the basis upon which higher level mathematical skills must be developed. Unfortunately, most definitions of these concepts have remained too general and vague to allow for the systematic teaching of such concepts. Educators have generally relied upon the experiences of a child which normally occur to teach these concepts. This may account for the close identification of such concepts with age norms and maturational theories of development. The maturational basis generally provided as an explanation of concept learning has lead to the exclusion of rudimentary mathematical concepts (i.e., big-little, long-short, one-many, etc.) from curricula designed for severely handicapped children. That is, since such children have not attained the required developmental stage of function they cannot possibly acquire such concepts. In truth, these concepts have been difficult to teach severely handicapped children. However, it was felt that this may be due to the absence of a precise definition of conceptual learning and the use of an instructional technology inadequate to insure the acquisition of these concepts.

This program attempted to:

1) precisely define several rudimentary mathematical concepts in terms of the response each student must make to demonstrate his acquisition of those concepts;

2) provide for the acquisition of those responses through the systematic application of a more precise instructional technology.

Hopefully, an instructional program combining both a more precise concept definition and technology of teaching would result in the acquisition of rudimentary mathematical concepts by severely handicapped students.

The initial step in the design of the program was to precisely define what was meant by "rudimentary mathematical concepts." For the purposes of this program the definitions utilized were specified in terms of the students' responses. That is, what a student would have to do to demonstrate that he had indeed acquired a concept. The definition of a concept offered by Becker, Englemann and Thomas, (1971) was utilized as the starting point for determining the concepts of the program:

"A concept in a given universe has been taught when the response (of the student) chosen by the teacher occurs consistently to concept instances, when this response does not occur to non-instances, and when variations in irrelevant concept characteristics have no effect on the accuracy of responding."

For example, in the big-little program the concept big (little) was defined as the students touching or labeling of the larger (smaller) of the pair of stimuli presented and continuing to touch or label the larger (smaller) stimuli as irrelevant stimulus dimensions (color, shape, texture) were varied.

The second step of the program was to systematically apply a teaching procedure that would result in the students acquiring the previously defined conceptual behavior. Stated most simply, this involved reinforcing one response in the presence of one stimulus class (larger stimulus of the pair) and reinforcing an alternative response in the presence of the alternative stimulus class (smaller stimulus). Initially attempts were made to pinpoint the relevant stimulus dimension (size) for the students by making it the only dimension available upon which the two stimuli could be discriminated.

That is, the stimuli were identical except for size. Once criterion level responding was reached, the pairs of stimuli were changed to vary irrelevant stimulus dimensions (color, shape, texture). Thus the instructional sequence consisted of a series of specific tasks. Again this program was developed in accord with Becker, Englemann and Thomas, (1971) conclusion that concepts are rarely, if ever, taught directly:

"A teacher teaches specific tasks. A task requires a particular response to a particular stimulus...Tasks are specifications of stimulus response relationships the teacher wants to establish. Teaching can be said to involve getting a task response going in the presence of a task signal. The general case is always taught through specific tasks."

PART 1 (BIG-LITTLE)

Materials

The 3 sets of materials utilized in the big-little instructional program are presented below in Table 1.

TABLE 1

Set I (objects)	Set II (paper shapes)	Set III (paper shapes)	
big can little can	big triangle little triangle	big triangle little square	big triangle little circle
big plate little plate	big square little square	big square little triangle	big square little circle
big cup little cup	big circle little circle	big circle little square	big circle little triangle
big can little can	big triangle little triangle	big triangle little square	big triangle little circle

TABLE 1 cont.

Set I (objects)	Set II (paper shapes)	Set III (paper shapes)	
big plate little plate	big square little square	big square little triangle	big square little circle
big cup little cup	big circle little circle	big circle little triangle	big circle little square
Set IA (objects)	Set IIA (paper shapes)		
big ball little ball	big abstract (shape) little abstract (shape)		
big plate little plate	big octagon little octagon		
big candy bar little candy bar	big diamond little diamond		
big ball little ball	big diamond little diamond		
big plate little plate	big octagon little octagon		
big candy bar little candy bar	big abstract (shape) little abstract (shape)		

Set I was comprised of three dimensional objects that were divided into three pairs of objects. These pairs were identical in every way except for their relative sizes. Thus, students were required to discriminate between two cans, plates or cups that were identical in every way except size.

Set IA was comprised of three dimensional objects that were divided into three pairs of objects. These pairs were identical in every way except for their relative sizes. Thus, students were required to discriminate between two balls, plates or candy bars, that were identical in every way except size. Since the relative size of the stimuli was of primary importance to this program, Set IA that was employed with *Ss* from Classroom A was considered to be equivalent with Set I employed in Classroom B.

Set II was comprised of three pairs of shapes (△,□,○) cut from construction paper. The two shapes comprising each pair of these stimuli were the same color; however, each of the three pairs were different colors. That is, the two triangles were purple, the two squares were red and the two circles were orange. The shapes were constructed so that each large shape was 9" in height and each small shape 2 1/2".

Set IIA was comprised of three pairs of shapes (8, abstract shape; ○, octagon; and ◇ , diamond) drawn with black magic marker on tagboard. Each shape was completely shaded in with black magic marker. The shapes were constructed so that each large shape was approximately 9" in height and each small shape 2 1/2". Since the relative size of the stimuli was of primary importance to this program, Set IIA that was employed with Ss from Classroom A was considered to be equivalent to Set II used in Classroom B.

Set III was comprised of six pairs of stimuli. These were the same stimuli used in Set II, however, they were now presented in every possible combination of dissimilar shape. That is, the big triangle was paired with both the little square and little circle, the big square was paired with both the little triangle and little square, and the big square was paired with both the little circle and little triangle. These pairings resulted in variation of the irrelevant stimulus dimensions, color and shape (previously held constant between big and little stimuli). It was felt that correct responses to this set demonstrated responding to the relevant stimulus dimension (size) while disregarding varying irrelevant stimulus dimensions (shape and color).

Procedure

The procedure utilized for teaching the rudimentary mathematical concepts of this program was the same for each of the four concepts taught. Stated simply, it consisted of reinforcing one response in the presence of one stimulus class and reinforcing an alternative response in the presence of the alternative stimulus class. Specifically, T presented two stimuli of different sizes to

S_1 and then directed S_1 to "Touch big." All correct responses were reinforced and all incorrect responses were corrected by modeling or priming. When *T* directed S_1 to "Touch little," all correct responses were reinforced and all incorrect responses were corrected by modeling or priming.

Since the concepts were all relative to the context in which the stimuli were presented (an adult may be big when compared to a child but small when compared to King Kong), stimuli were always presented in pairs to permit direct comparisons.

Step I - Baseline

Baseline measures of each *S*'s performance on all components of the program were obtained prior to any instruction. In addition, baseline measures were obtained again following Steps II and III (last step in the program). These measures were conducted in a group setting with *S*'s alternating turns. For each step an *S* was required to respond to *T*'s verbal direction in the presence of the appropriate instructional materials. The response was recorded by *T* without indicating to an *S* the accuracy of a response; that is, all responses were followed by *T*'s neutrally spoken, "Thank you." A baseline trial for each *S* (and all teaching trials) consisted of two presentations of all the pairs of stimuli comprising a set (3 pairs in Sets I and II, 6 pairs in Set III). This allowed *T* to direct an *S* to touch both the little and big stimulus in each pair. Thus each trial for Set I consisted following 6 combinations of verbal directions and stimuli:

Verbal Direction	Stimulus Pairs
1) "Touch big"	big ball little ball
2) "Touch big"	big plate little plate

Verbal Direction	Stimulus Pairs
3) "Touch big"	*big candy bar* little candy bar
4) "Touch little"	big ball *little ball*
5) "Touch little"	big plate *little plate*
6) "Touch little"	big candy bar *little candy bar*

The two directions and three pairs of stimuli were arranged and presented randomly, with the constraint that once an *S* had been given any of the six combinations of directions or stimuli, it was not presented again until each of the remaining combinations (directions and pairs) was presented once. A minimum of two such trials were obtained prior to instruction on a task.

Step II Touching big or little materials following T's verbal direction.

Ss had previously been taught to imitate the touching of objects following *T*'s demonstration. Therefore, imitation of *T*'s touching was utilized as the main instructional procedure:

1) *T* placed the initial pair of stimuli (little ball, big ball) on the table in front of S_1 and said, "S_1, touch (big/little)." If S_1 touched the appropriate stimulus, *T* smiled, said "Good," provided a consumable consequence, recorded a correct response and presented a different combination of directions or stimuii to S_2, etc.

2) If S_1 touched the incorrect stimuli, *T* said, "No," repeated the verbal direction, "Touch (big/little)" and demonstrated the correct response by touching the appropriate stimulus. Then *T* repeated the verbal direction, "S_1, touch (big/little)" and waited for S_1 to respond. If S_1 imitated *T*'s demonstration, *T* smiled, said "Good" but did not provide a consumable consequence and recorded an "I" on the data sheet. Consumable consequences were provided only when *Ss* responded correctly to *T*'s initial verbal directions. Social consequences were provided for correct imitations of *T*'s demonstrations. Subsequently, a different combination (directions and pairs) was presented to S_2, etc.

3) If $\underline{S_1}$ did not touch the correct stimulus following T's demonstration, T said, "No," repeated the verbal cue, "$\underline{S_1}$, touch (big/little)" and primed the correct response. When S completed the touching response with T's assistance, T smiled, said, "Good," but did not provide a consumable consequence and recorded a "P" on the data sheet.

4) Instruction continued until all priming and modeling cues were faded and until an S responded correctly on 3 consecutive trials (18 correct responses). Subsequently, instruction was initiated on Step III.

Step III Labeling big or little materials following T's question.

Prior to the initiation of instruction on this step T determined whether an S could reliably produce a recognizable imitation of the words big and little. If an S did not produce such an imitation, instruction on Step III was delayed until articulation of these words was taught.

1) T placed one pair of stimuli on the table directly in front of $\underline{S_1}$, touched the big (little) stimulus and said, "$\underline{S_1}$, is this big or little?" If $\underline{S_1}$ said, "Big" (little), T smiled, said, "Good," provided a consumable consequence and recorded a correct response. Subsequently T presented a different combination to $\underline{S_2}$, etc.

2) If $\underline{S_1}$ labeled the stimulus T pointed to incorrectly or did not respond at all, T said, "No" repeated the question, "Is this big or little?" and provided the correct answer, "Big" (little). Then T repeated the question (still pointing at the big (little) stimulus), "$\underline{S_1}$, Is this big or little?" and waited for $\underline{S_1}$ to respond. If $\underline{S_1}$ imitated T's demonstration, T smiled, said, "Good" but did not provide a consumable consequence and recorded an "M" on the data sheet. Subsequently T presented a different combination to $\underline{S_2}$, etc.

3) If $\underline{S_1}$ did not imitate T's verbal model of the correct response, T repeated precedure #2 described above. If $\underline{S_1}$ again failed to imitate T's model, T terminated $\underline{S_1}$'s trial and presented a different combination to $\underline{S_2}$, etc.

4) Instruction was continued until all modeling cues were faded and until an S responded correctly on 3 consecutive trials (18 correct responses).

PART II (LONG-SHORT)

Materials

The two sets of materials utilized in the long-short instructional program are presented below in Table 2.

TABLE 2

Set I	Set II	
long line short line	long line short paper	long line short pipe cleaner
long paper short paper	long paper short line	long paper short pipe cleaner
long pipe cleaner short pipe cleaner	long pipe cleaner short line	long pipe cleaner short paper
long line short line	long line short paper	long line short pipecleaner
long paper short paper	long paper short pipe cleaner	long paper short line
long pipe cleaner short pipe cleaner	long pipe cleaner short line	long pipe cleaner short paper

Set I was comprised of two and three dimensional stimuli that were divided into three pairs. These pairs were identical in every way except for their relative lengths; thus, Ss were required to discriminate between two lines, papers or pipe cleaners that were identical except for length. Stimuli were either mounted or drawn upon 9" x 12" sheets of white paper with each pair differing in color from the other two pairs. "Long" stimuli were 10" and "short" stimuli were 3" in length.

Set II was comprised of six pairs of stimuli. These were the same stimuli used in Set I, however, they were now presented in every possible combination of dissimilar objects. Thus the long line was paired with both the short paper and short pipe cleaner, the long paper was paired with the short line and short pipe cleaner and the long pipe cleaner was paired with the short line and short paper. These pairings again resulted in a wide variation in the irrelevant stimulus characteristics (color, texture, etc.).

PART III (ONE-MANY)

Materials

The three sets of materials utilized in the one-many instructional program are presented below in Table 3.

TABLE 3

Set I	Set II	Set III
one pencil many pencils	one pencil many tongue depressors	one block many blocks
one tongue depressor many tongue depressors	one pencil many circles	one block many blocks
one circle many circles	one tongue depressor many pencils	
one pencil many pencils	one tongue depressor many circles	
one tongue depressor many tongue depressors	one circle many pencils	
one circle many circles	one circle many tongue depressors	
	one pencil many tongue depressors	
	one pencil many circles	
	one tongue depressor many pencils	
	one tongue depressor many circles	
	one circle many pencils	
	one circle many tongue depressors	

TABLE 3 cont.

Set IA	Set IIA	Set III
one flag many flags	one flag many pieces of gum	
one pencil many pencils	one flag many pencils	
one piece of gum many pieces of gum	one pencil many pieces of gum	
one flag many flags	one pencil many flags	
one pencil many pencils	one piece of gum many pencils	
one piece of gum many pieces of gum	one piece of gum many flags	
	one flag many pieces of gum	
	one flag many pencils	
	one pencil many pieces of gum	
	one pencil many flags	
	one piece of gum many flags	
	one piece of gum many pencils	

Set I was comprised of objects that were divided into three pairs of stimuli. Each of the three pairs was constructed by mounting one object on a 9" x 12" sheet of white paper and many of the same objects (approx. 8) on another 9" x 12" sheet. The two stimuli were identical except for the number of objects mounted on each sheet.

Set IA was constructed in the same manner as Set I, however, different objects were utilized (flags, pieces of gum and pencils). This set was employed in Classroom A and was considered to be equivalent to Set I employed in Classroom B.

Set II was comprised of six pairs of stimuli. These were the same stimuli used in Set I, presented in all possible combinations of one-many (excluding Set I).

Set IIA was constructed in the same manner as Set II, however, the objects of Set IA were utilized. This set was employed in Classroom A and was considered to be equivalent to Set II employed in Classroom B.

Set III, rather than being comprised of pairs of stimuli, was initially a pile of nine blocks from which Ss were required to give T one or many (blocks). This set was included to provide both a distinctly different response (giving vs touching) and stimuli of a different type (pile of blocks). Hopefully this task provided some measure of generalization of the one-many concept and additional responses utilizing the concept.

While the procedure previously delineated in the big-little program was utilized to teach Sets I (IA) and II (IIA) of this program, a different procedure was necessary to teach Set III. This procedure follows:

1) T placed 9 blocks on the table directly in front of S_1 and said "S_1, give me one (or many)." If S_1 gave T the correct number of blocks (many defined as 3 or more blocks), T smiled, said, "Good," provided a consumable consequence and recorded a correct response on the data sheet. Then T placed the blocks in front of S_2 and presented a different cue.

2) If S_1 did not respond or gave T an incorrect number of blocks, T said "No!", repeated the cue "Give me one (or many)" and modeled the correct response. This demonstration consisted of T bringing the correct number of blocks toward herself. After repositioning the blocks in front of S_1, T again repeated the cue, "S_1, give me one (or many)." If S_1 responded correctly, T smiled, said, "Good," but did not provide a consumable consequence. Then T recorded an "M" on the data sheet, placed the blocks in front of S_2 and presented a different cue.

3) If S_1 did not respond or still gave T an incorrect number of blocks, T said, "No!", and repeated the cue, "Give me one (or many)." Then T primed the correct response and following the completion of the correct response with the assistance of T's prime, provided social consequences to S_1 (smile, "Good"). T recorded a "P" on the data sheet, placed the blocks in front of S_2 and presented a different cue.

4) The teaching procedure was continued until S responded correctly on 3 consecutive trials, with each trial consisting of 2 correct responses or a total of 6 consecutive correct responses.

PART IV (STRAIGHT-CURVED)

Materials

The two sets of materials utilized in the straight-curved instructional program are presented in Table 4.

TABLE 4

Set I	Set II	
straight line curved line	straight line curved paper	straight line curved string
straight paper curved paper	straight paper curved line	straight paper curved string
straight string curved string	straight string curved line	straight string curved paper
straight line curved line	straight line curved paper	straight line curved string
straight paper curved paper	straight paper curved line	straight paper curved string
straight string curved string	straight string curved paper	straight string curved line

Set I was comprised of two and three dimensional stimuli that were divided into three pairs. These stimuli in each pair were identical except for their curvature; thus Ss were required to discriminate between two lines, papers, or strings that were identical except for curvature. Stimuli were either mounted or drawn upon 9" x 12" sheets of white paper, with each pair differing in color from the other two pairs. Straight stimuli were constructed utilizing a ruler, curved stimuli had at least a 20° curvature.

Set II was comprised of six pairs of stimuli. These were the same stimuli used in Set I, presented in all possible combinations of straight-curved (excluding Set I).

RESULTS

The results for the 12 Ss involved in the program are summarized in Tables 5-8 presented below. Again, the results of individual Ss have been selected to represent typical performances of clusters of Ss.

These results are presented in four parts as was the preceding program.

PART 1 (BIG-LITTLE)

Three types of performance trends manifested by the 12 Ss involved in this program may be described as:

1) seven Ss (1, 2, 5, 6, 8, 10 & 14) who did not reach criterion on any of the sets in the program;

2) one S (3) who reached criterion on the initial set of the program;

3) five Ss (4, 9, 11, 12, and 13) who reached criterion on all of the sets they were exposed to either during testing (baseline) or following a small number of teaching trials (Ss 9, 11, 12, and 13 received no instruction on Set I, but instead started the program with Set II).

TABLE 5

BIG-LITTLE SETS REACHING CRITERION

Student Number	Set I	Set II or Set IIA (Touching)	Set III	Set I	Set II or Set IIA (Labeling)	Set III
1						
2						
5						
6						
8						
10						
14						
3	X					
4	X	X	X	X	X	X
9	*	X	X	*	X	X
11	*	X	X	*	X	X
12	*	X	X	*	X	X
13	*	X	X	*	X	X

*component of program skipped   X criterion reached on a particular set

It should be noted that two different criterion levels were adopted. During testing (baseline) conditions criterion performance was defined as two consecutive trials of correct responding. During the teaching phases criterion was defined as three consecutive trials of correct responding (18 or 36 consecutive responses).

$\underline{\text{Ss}}$ displaying the poorest type of performance will be discussed first. The results of $\underline{S}_1$ were selected to represent the responding typical of this level of performance. As can be discerned from Figure 1, $\underline{S}_1$ performed inconsistently throughout the teaching phases of the program. Even the modification of the teaching procedure at trial 34 failed to produce the desired consistant high level of correct responding. This was the same procedure that had been successfully employed with $\underline{S}_{14}$ in the receptive language program (touching and naming each of the objects prior to *S*'s touching the objects - e.g., *T* touched big and said, "big," *T* touched little and said, "little," then *T* said to *S*, "touch big (little)"). Teaching was continued with S_1 for approximately 110 trials, at which time the school year ended and S_1 still had not reached the criterion level of responding.

A second performance level was displayed by only one student, S_3 (Figure 2). S_3 required many teaching trials (125), but did reach criterion on the first big-little set. The re-baseline period that followed S_3's criterion responding on Set IA resulted in the maintenance of near criterion level of responding on Set IA (17 of 18 correct) and an increase in the level of correct responding on Set IIA (14 of 18) over the initial baseline (9 of 18). Subsequent instruction on Set IIA could not be completed due to the ending of the school year.

The final type of performance was displayed by *Ss* 4, 9, 11, 12, and 13. These *Ss* either responded at criterion level during the testing (baseline) conditions or following a small number of teaching trials. The results of S_9 were selected to represent the performance level of these *Ss* and are depicted in Figures 3 and 4.

During the initial baseline of both Sets I and II, S_9 made 6 out of 12 possible correct responses on Set I and 8 out of 24 possible correct responses on Set II (Figure 3). Instruction was initiated on Set I and following 10 teaching trials the criterion level of responding was attained. Subsequent re-baseline of Sets I and II resulted in a maintenance of the errorless responding on Set I (12 of 12 correct) and an increase to 23 of 24 correct in Set II. The high degree of correct responding on Set II indicated that instruction on this set was unnecessary and a program of verbal labeling of Set I and II was initiated.

Initial baseline measures of $\underline{S}_9$'s verbal labeling of the big (little) stimulus of both Set I and Set II were obtained, with $\underline{S}_9$ making 5 of 12 possible correct responses on Set I and 13 of 24 possible correct on Set II. Instruction on Set I was brief, in that only 4 teaching trials were required for $\underline{S}_9$ to reach criterion. Re-baselines were obtained on both Set I and II, with a slight drop of correct responding in Set I (10 of 12 possible correct responses) and errorless performance on Set II (24 of 24). Following the errorless re-baseline performance on Set II, instruction on this set was clearly unnecessary.

PART II (LONG-SHORT)

Since instruction was initiated on this part of the program only after criterion was reached on the big-little program, only four Ss (9, 11, 12, and 13) were involved. The results of these four students are summarized below in Table 5.

TABLE 6

LONG-SHORT SETS REACHING CRITERION

Student Number	Set I (Touching)	Set II (Touching)	Set I (Labeling)	Set II (Labeling)
12				
9	X	X	X	X
11	X	X	X	X
13	X	X	X	X

X criterion reached on a particular set

As can be discerned from inspection of this table, one S (12) did not reach criterion on any of the sets involved in the long-short part of the program. The results of $\underline{S}_{12}$ are similar to Figure 1 ($\underline{S}_1$) discussed earlier and aretherefore not included. The remaining 3 Ss (S 9, 11, and 13) responded at criterion level on Sets I and II (both touching and labeling) either during testing (baseline) conditions or following a small number of teaching trials. The results of S_9 were selected to represent the performance typical of these three Ss.

During baseline conditions (Figure 5) S_9 made 7 of 12 correct touching responses on Set I and 10 of 24 correct touching responses on Set II. Instruction on Set I was completed when S_9 reached criterion, requiring only 12 teaching trials. Subsequent re-baselines on Sets I and II, demonstrated a maintenance of errorless responding on Set I (12 of 12) and a high degree of correct responding on Set II (21 of 24). Responding on Set II was considered accurate enough that no instruction was required on this set.

During baseline conditions (Figure 6), S_9 made 5 of 12 correct labeling responses on Set I and 6 of 24 labeling responses on Set II. Following 18 teaching trials, instructional criterion was met on Set I and re-baseline measures were obtained for both Sets I and II. The re-baseline measures demonstrated the maintenance of errorless responding of S_9 on Set I (12 of 12) and also errorless responding on Set II (24 of 24).

PART 3 (ONE-MANY)

The thirteen Ss who were involved in this part of the program can be grouped into four clusters, based upon the results of instruction. These results are summarized in Table 7 and the resulting clusters may be categorized as follows:

1) six Ss (1, 2, 3, 5, 6, and 10) who did not reach criterion on any sets;
2) three Ss (4, 8, and 14) who reached criterion on Set I (or IA);

TABLE 7

ONE - MANY SETS REACHING CRITERION

(Touching)

Student Number	Set I (or IA)	Set II (or IIA)	Set III
1			
2			
3			
5			
6			
10			
4	X		
8	X		
14	X		
12	X	X	
13	X	X	
9	X	X	X
11	X	X	X

X = criterion reached on a set

3) two Ss (12 and 13) who reached criterion on Sets I and II (or IA and IIA);

4) two Ss (9 and 11) who reached criterion on Sets I, II and III.

As these results are extremely similar to those presented previously in this program, no graphic presentations of these results are included.

PART 4 (STRAIGHT-CURVED)

Since instruction was initiated on this part of the program after criterion was reached on the long-short part, only three Ss (9, 11 and 13) were involved. All three Ss reached criterion on each of the sets utilized in the program either during testing (baseline) conditions or following a small number of teaching trials. These results are summarized in Table 8.

TABLE 8

STRAIGHT-CURVED SETS REACHING CRITERION

Student Number	Set I (Touching)	Set II (Touching)	Set I (Labeling)	Set II (Labeling)
9	X	X	X	X
11	X	X	X	X
13	X	X	X	X

X = criterion reached on a set

The individual results of S_9 are presented graphically (Figures 7 and 8) to depict results typical of these 3 Ss. During the initial baseline conditions, S_9 made 7 of 12 correct touching responses to Set I and 16 of 24 responses to Set II. Only 5 teaching trials were required for S_9 to reach criterion. Re-baseline measures demonstrated a maintenance of errorless responding to Set I (12 of 12) and also errorless responding to Set II (24 of 24). Baseline measurements of the labeling of stimuli comprising Sets I and II were subsequently obtained. Responding to both Sets I and II was errorless.

DISCUSSION

In keeping with the relative nature of the program, the results of the "rudimentary concepts" program were either good or bad. On the good side were the students (9, 11 and 13) who progressed rapidly through all portions of the program. Apparently these students acquired the concepts with few teaching trials and displayed good generalization of correct responding across different sets of materials and responses (touching, labeling). The bad aspects were unfortunately more numerous. Particularly disconcerting was the failure of some students (1, 2, 5, 6, 8 and 10) to reach criterion on even one set of the four part program. Of these students, student 10 entered Classroom B after the midpoint in the school year (2-12-73). For this reason student 10 received far fewer teaching trials than the other students and this may account in part for the fact that no set reached criterion. The remaining students (1, 2, 5, 6 and 8) were from Classroom A, except student 8 (clearly the lowest functioning student in Classroom B). These students were all largely nonverbal and displayed the most limited behavioral repertoires of of the thirteen students involved in any of the four parts of the "rudimentary concepts" program. The speculation of the authors is that some prerequisite skills may have been absent in these students. Exactly what these prerequisites might be is, of course, not known. However; one, some or all of the following might be involved and are currently being investigated:

1) attending of these students to both the stimuli and verbal directions presented by the teacher appeared to be poorest in these students;

2) the language skills displayed by these students (touching objects named by the teacher and following verbal directions) appeared to be the poorest of all of the students;

3) the behavior problems displayed by these students were the most pervasive in that (while not the most extreme or intense) more undesirable behaviors occurred over a wider range of conditions.

Another area of consideration is the teaching procedure utilized in the program. Initially this procedure appeared to be an improvement over earlier attempts at teaching rudimentary conceptual behavior. However, it clearly was not general enough to be suitable for all children and did not possess the procedural modifications necessary to insure acquisition of conceptual behavior by all students. Again, several alternatives are being considered in relation to the materials themselves:

1) how can attention be focused upon the differences of the stimuli to be discriminated, i.e., how can the relevant stimulus dimension be highlighted?

2) do variations in the magnitude (size, shape, number, curvature) of the stimuli constitute an important instructional variable, especially relative magnitudes;

3) does the variation of irrelevant stimulus characteristics (dimensions) initially help or hinder acquisition; should variations be introduced gradually?

Possibly the extremely limited language skills displayed by the students did not provide an adequate basic behavioral repertoire upon which the rudimentary concepts could be developed. Additional training in language skills considered to be less complex (e.g. discriminating objects and actions in response to verbal cues) may be necessary prior to the acquisition of the concepts comprising this program.

While the problem of teaching rudimentary conceptual behavior still remains to be solved, it is clearly a problem whose solution is worthy of the effort required. Once acquired:

> "conceptual behavior is one of the most important aspects of behavior because it provides a means for responding correctly in novel situations....(The formation of concepts) give(s) us a mechanism whereby a student can be trained in a variety of specific situations, can form a concept, and then can respond appropriately to an entirely new situation. The training generalizes to these new situations." (Whaley and Malott, 1969)

FIGURE 1
Big - Little (Touching)
(S #1)

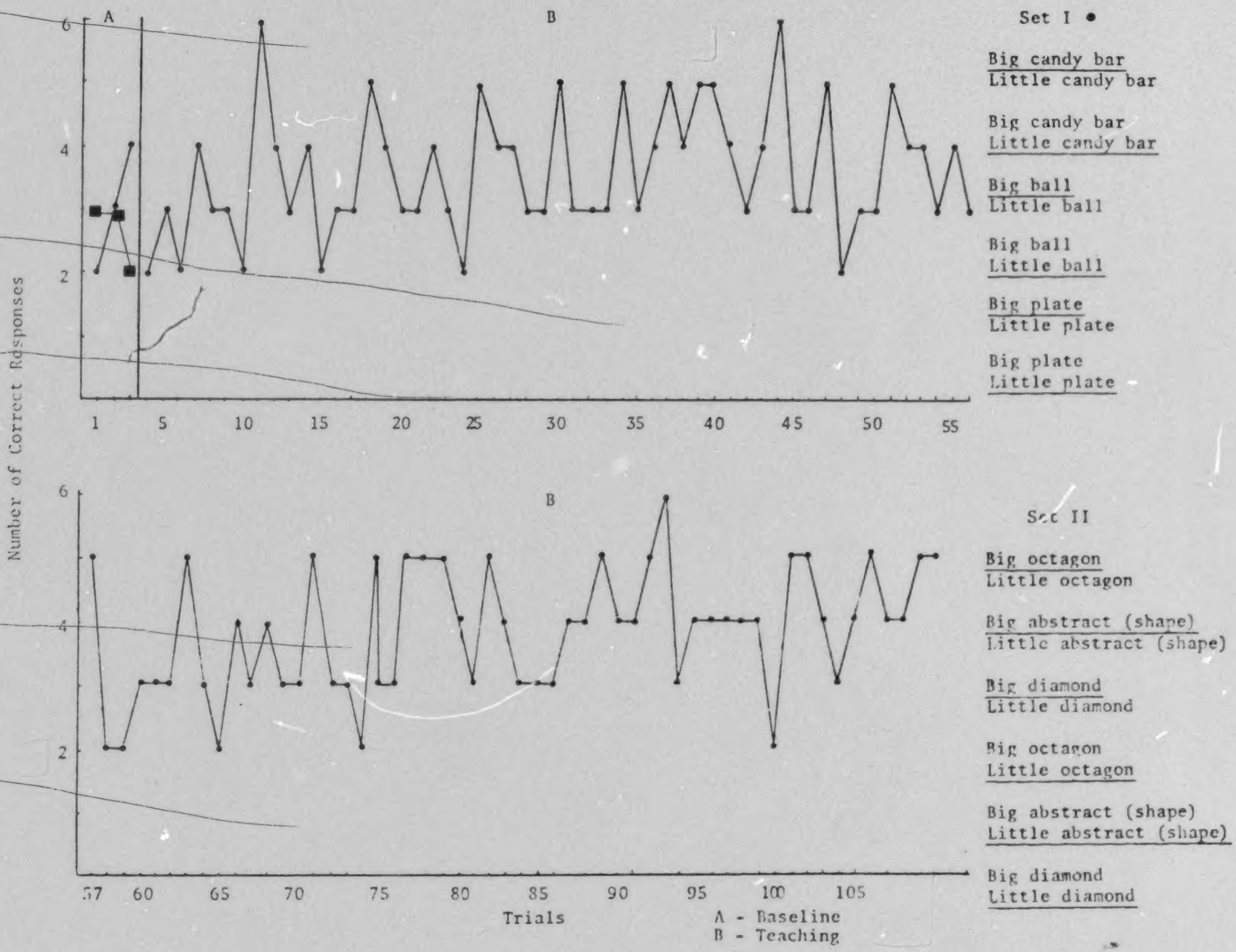


FIGURE 2

Big - Little (Touching)

(S #3)

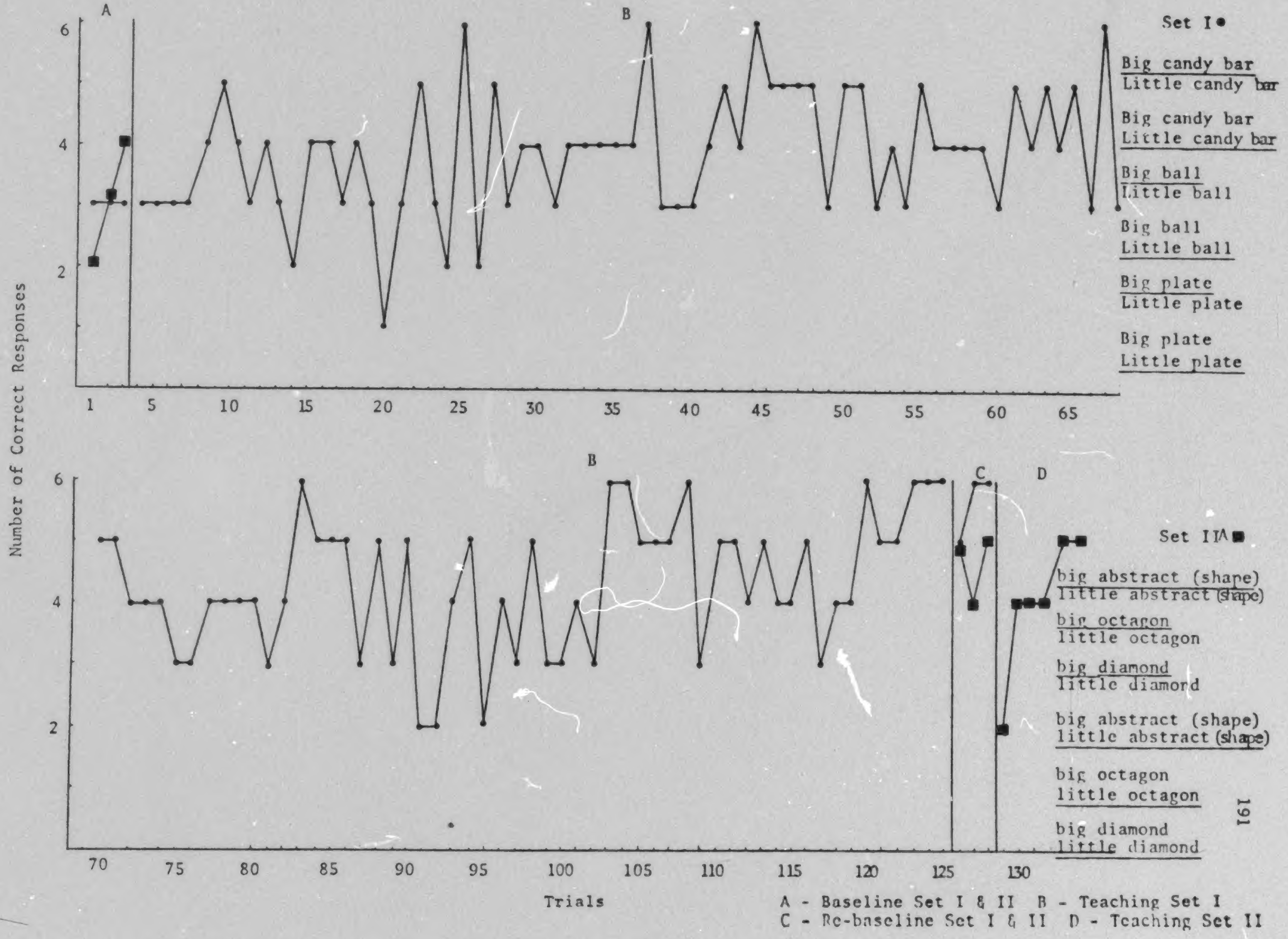


FIGURE 3

Big - Little (Touching)

(S #9)

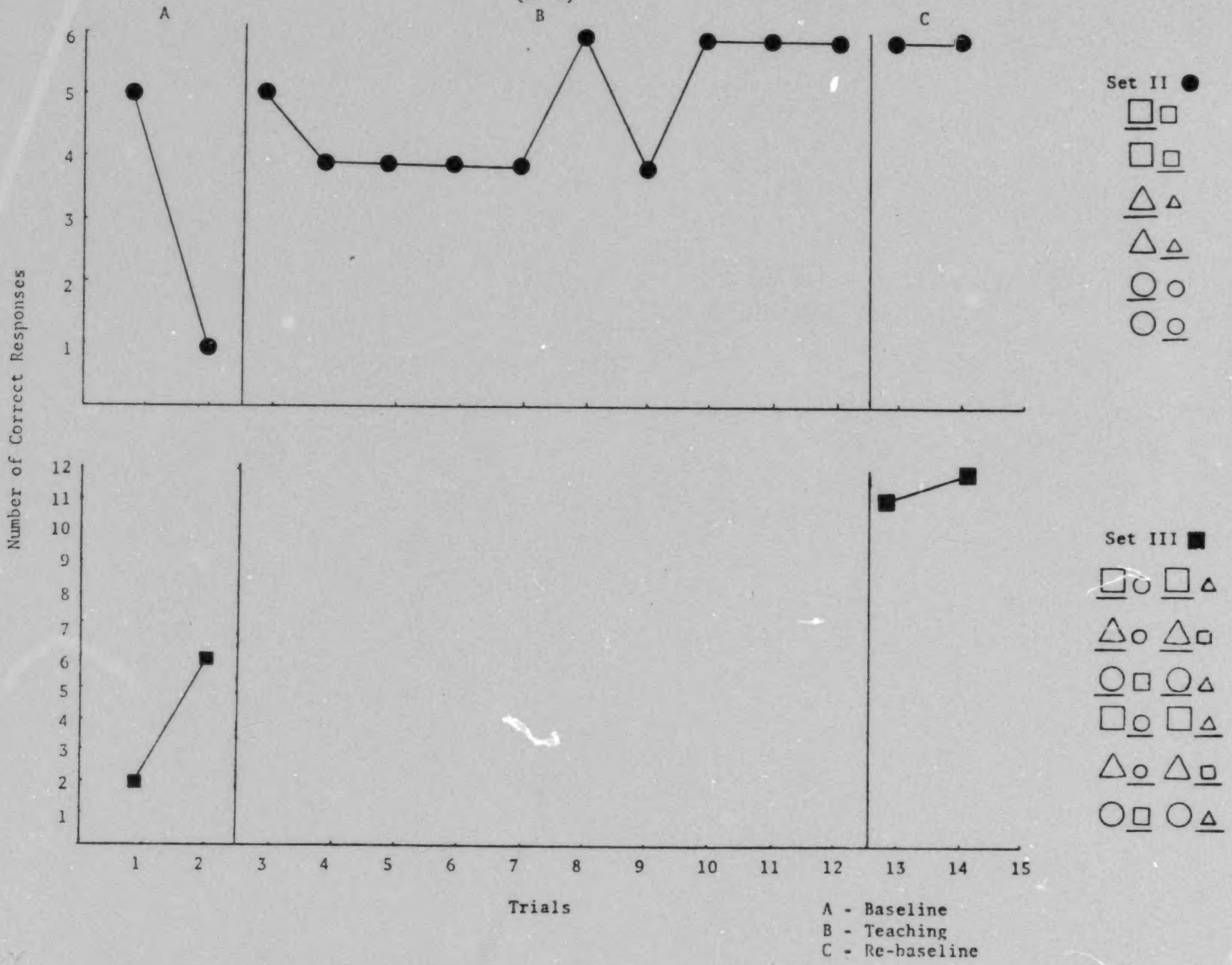


FIGURE 4
Big - Little (Labeling)
(S #9)

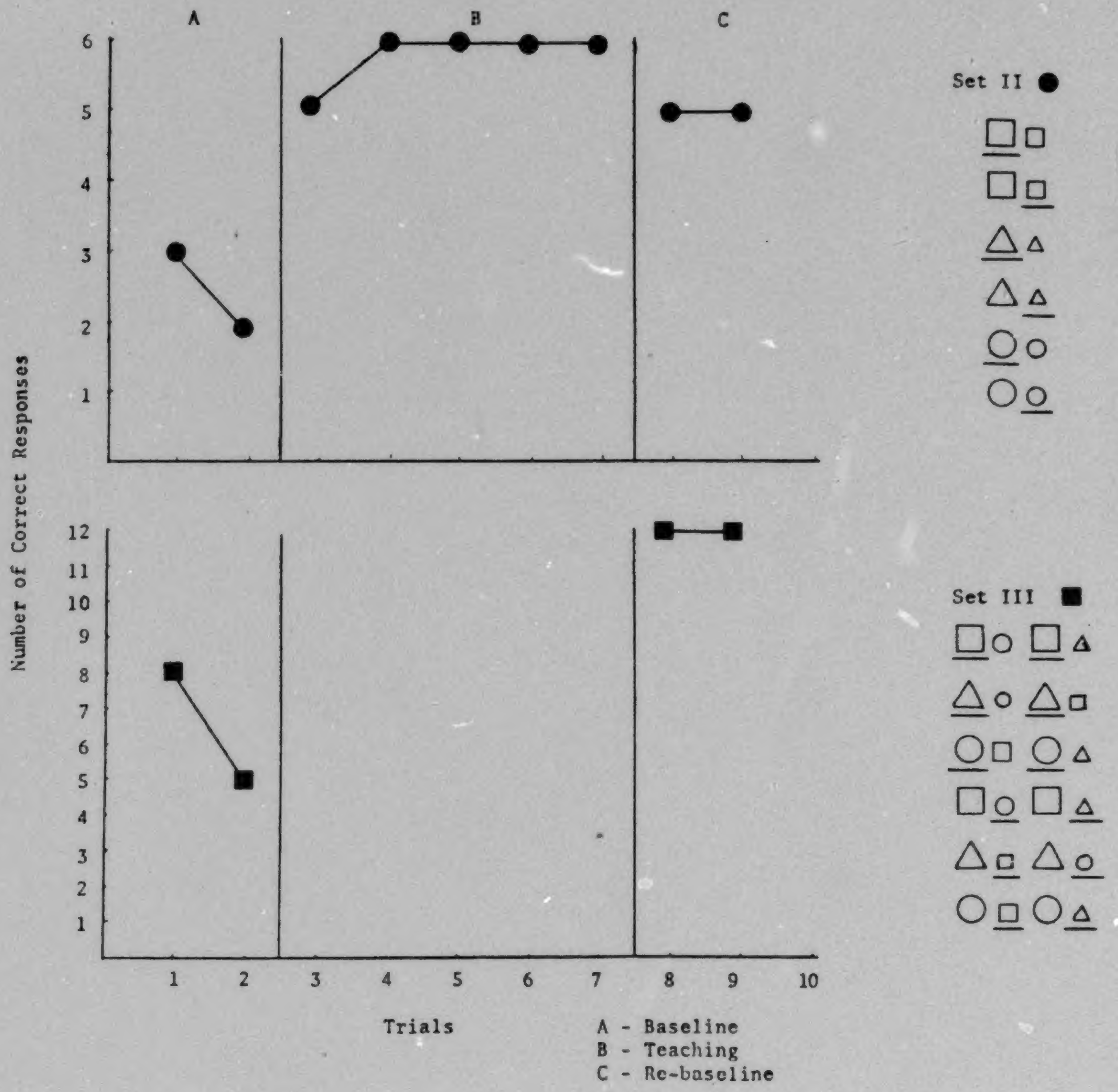


FIGURE 5
Long - Short (Touching)
(S #9)

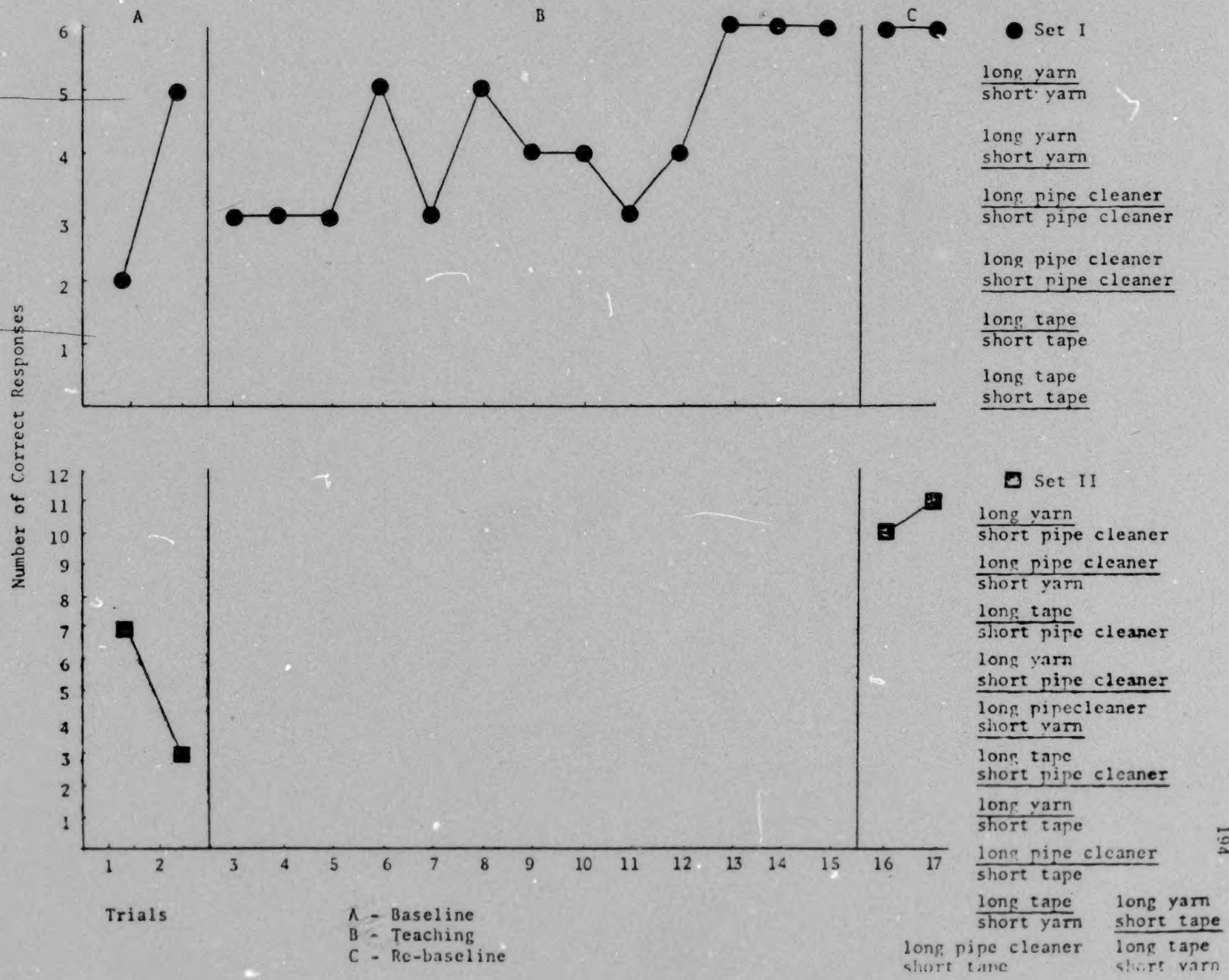


FIGURE 6
Long - Short (Labeling)
(S #9)

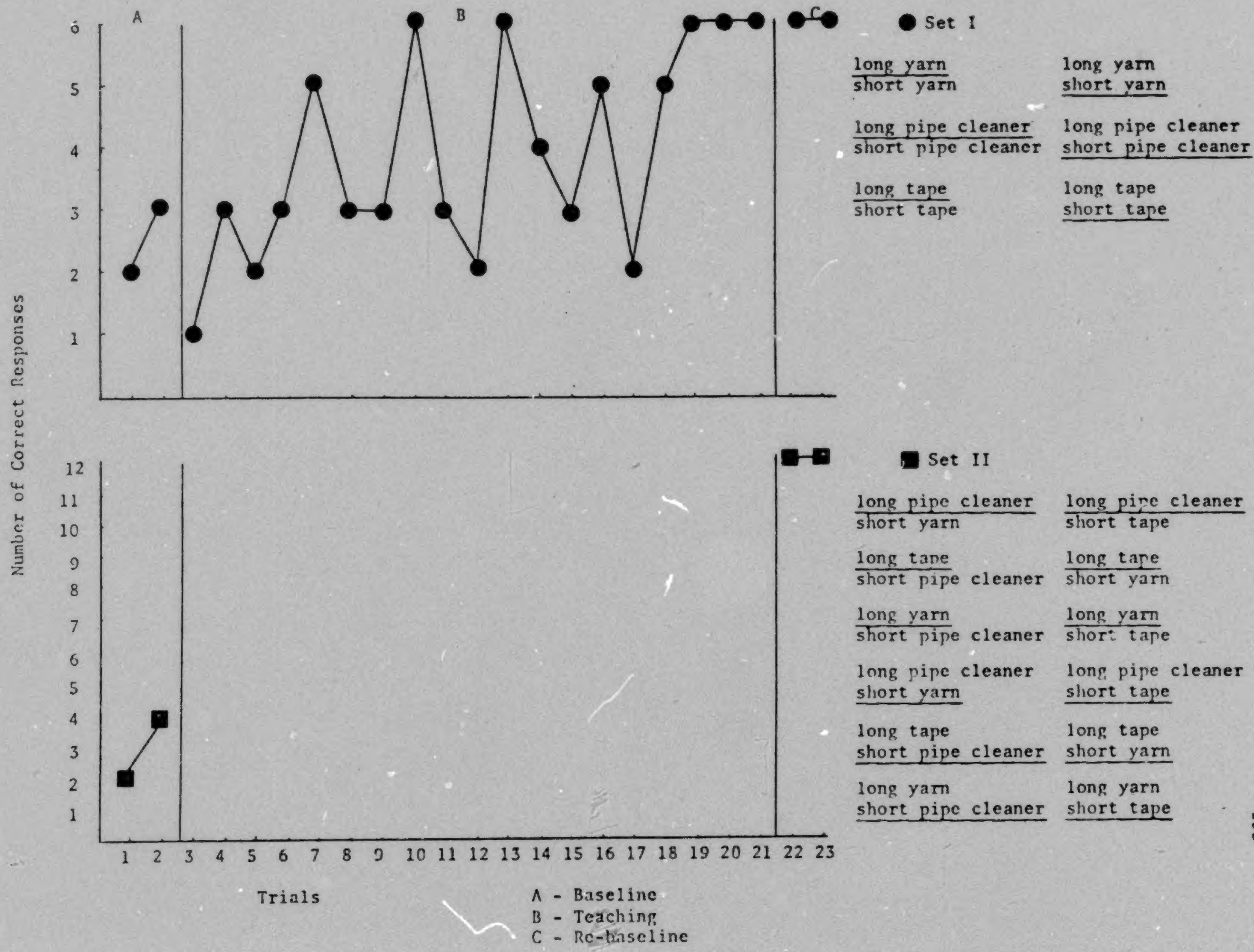


FIGURE 7
Straight - Curved (Touching)
(S #9)

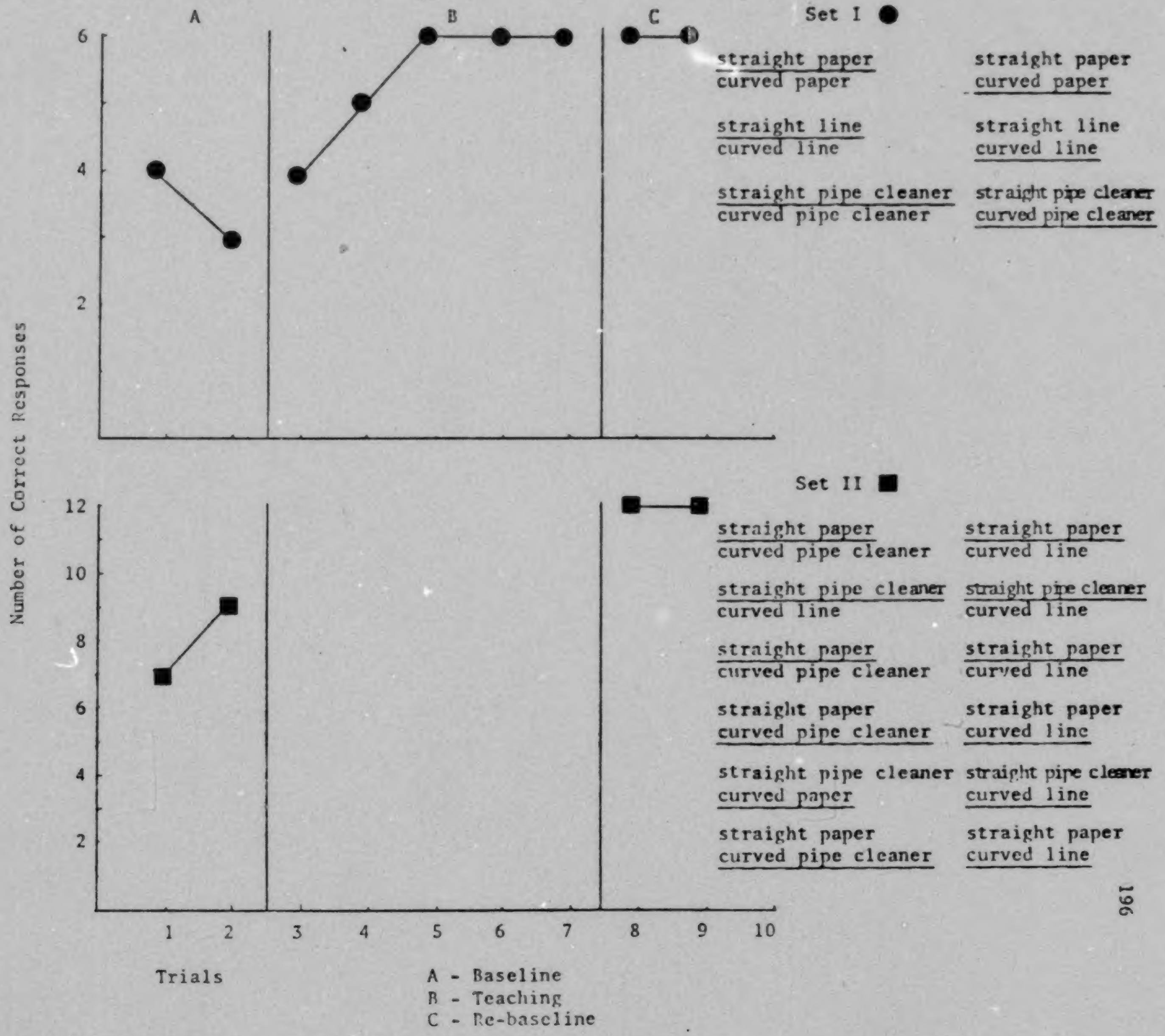
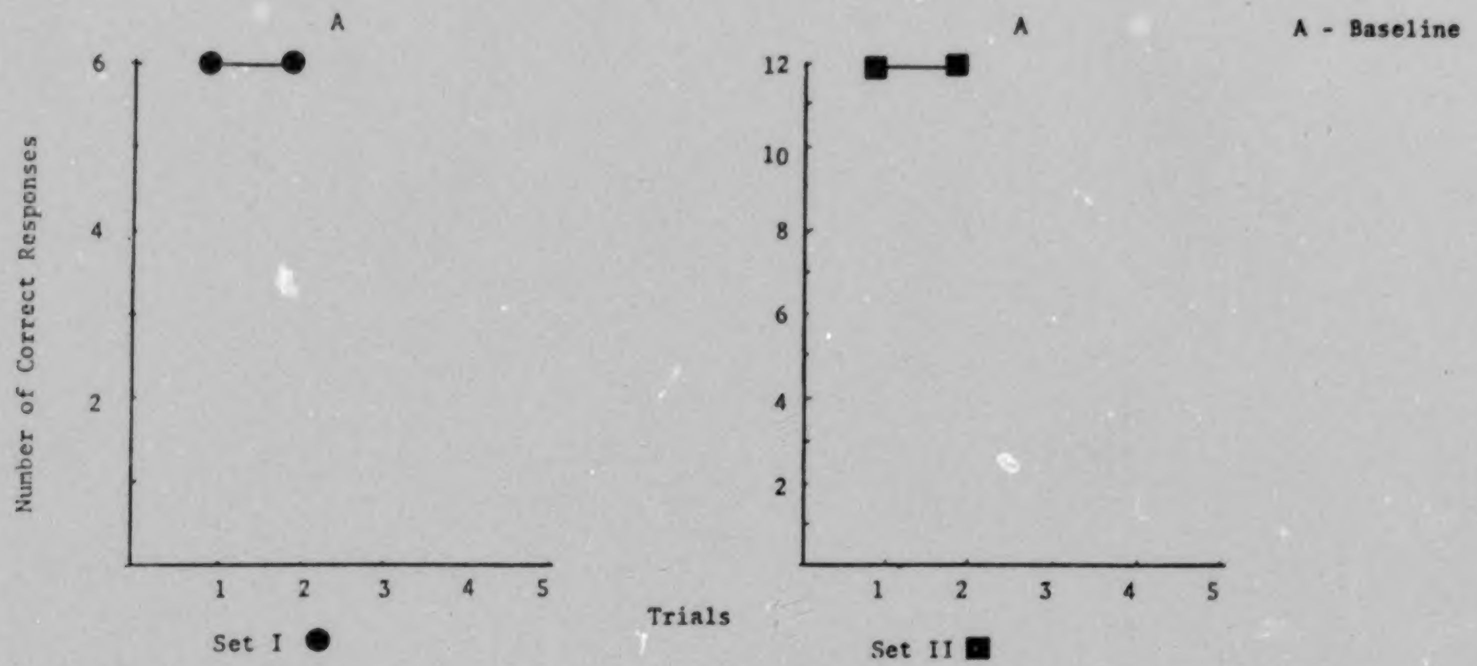


FIGURE 8

Straight - Curved (Labeling)

(S #9)



straight paper
curved paper

straight pipe cleaner
curved pipe cleaner

straight line
curved line

straight paper
curved paper

straight pipe cleaner
curved pipe cleaner

straight line
curved line

straight pipe cleaner
curved line

straight line
curved pipe cleaner

straight paper
curved pipe cleaner

straight line
curved pipe cleaner

straight pipe cleaner
curved line

straight paper
curved pipe cleaner

straight pipe cleaner
curved paper

straight line
curved paper

straight paper
curved line

straight line
curved paper

straight pipe cleaner
curved paper

straight paper
curved line

DATA SHEET

ONE - MANY PROGRAM

Phase I

Date: ______________ Set: ______________ Cue: ______________

Name	Trial	one pencil many pencils	one tongue depressor many tongue depressors	one circle many circles	one pencil many pencils	one tongue depressor many tongue depressors	one circle many circles	Number Correct Responses

Phase II

Date: ______________ Set: ______________ Cue: ______________

Name	Trial	one pencil many tongue depressors	one pencil many circles	one circle many tongue depressors	one circle many pencils	one tongue depressor many pencils	one tongue depressor many circles	one pencil many tongue depressors	one circle many pencils	one circle many tongue depressors	one tongue depressor many pencils	one tongue depressor many circles	one pencil many circles	Number Correct Responses

Pre-Writing Program

When a teacher of young trainable level students is confronted with the task of developing an instructional program for her class, she must decide what types of skills should be taught. In making program decisions, the teacher must view each skill in terms of necessity. The teacher should decide what skills the student needs to acquire at the present time, and also what skills are necessary for him to have acquired by the time he reaches adulthood. Communication skills are of primary importance to trainable level students in order for them to function effectively in the community environment. Certainly the teacher will deal with verbal communication skills, but the written forms of communication are also extremely important. As students approach adulthood they will be confronted on numerous occassions with situations requiring the writing of names, addresses, grocery lists, etc., thus, the ability to print or write will become extremely important to the students' survival in social, vocational and domestic settings.

Thus, the teachers involved made the programmatic decision that the students must be taught basic written communication skills. The program presented here was designed and utilized to develop pre-writing (printing) skills in young trainable level students.

Students (Ss)

Eleven of the 14 Ss in Classrooms A and B were involved in the program. These eleven Ss were judged by the teachers as possessing the visual-motor movements necessary to execute the desired responses. Each S progressed through the program on the basis of his performance on the successive tasks. The Ss were seated at the small group instructional tables (See diagrams of room in Appendix B). The teacher (T) would sit next to an S or stand directly behind him during instruction.

Materials:

1) Primary writing paper

2) Primary lead pencils (Some pencils were marked with tape to facilitate correct pencil holding)

The stroke elements (letters or words) to be printed by an S would be printed on the upper one third of the paper in magic marker or pencil by T prior to instruction.

Instructional Sequence:

The program contained three behavioral objectives:

1) Ss were to motorically produce specific stroke elements when presented with a printed model of the desired stroke.

The specific stroke elements are as follows:

1. |
2. —
3. \
4. /
5. O
6. ∩
7. ∪
8. ⊃
9. ⊂

Not every S was required to print all 9 stroke elements. Selection of stroke elements to be taught to individual Ss was based upon the stroke elements necessary to print the letters in their first names.

2) Ss were to combine the appropriate stroke elements to form the letters which occur in their first names when presented with a printed model of the specific letters.

3) Ss were to combine the appropriate letters in the correct sequence to print their first names when presented with a printed model of their name.

The preparation of these three objectives took into consideration the statement made by Rayek and Nesselroad (1972): "...letters are made up of stroke elements." Stroke elements can be defined as the precise line and curve components of a printed letter produced by discrete motor movements. Thus in printing the letter "P", two stroke elements are involved: | and ⊃ .

Initially Ss were to respond to teacher models of the stroke elements. When their motor responses were considered to be adequate approximations of the teacher model, Ss were taught to print specific letters using these stroke elements. The stroke elements necessary to print a specific letter were combined by using a chaining procedure. For example, to print the letter "L", an S was taught to chain the motor movements involved in making the two stroke elements, a straight vertical line and a straight horizontal line, into one motor movement to produce the single letter "L".

As soon as individual Ss could print approximations of the first two letters in their first names, they were then taught to print them as a letter group. For example, Lisa would first be taught to print the letters "L" and "i". Subsequently, Lisa would be taught to print the letter group "Li". While being instructed in the printing of "Li", Lisa would also be taught to print the letter "s". Subsequently the printing of the letter group "Lis" would be taught. These procedures for chaining the individual letters into letter groups were followed until Ss could print their entire first names from a printed model. Subsequently Ss were taught to print their surnames, street addresses, letters of the alphabet and other words according to individual progress.

Another consideration in the design of this program was whether Ss had the prerequisite skills necessary to print. As stated previously, only those students who possessed the necessary motor control to print were involved in this program. Another desired prerequisite was that student's could hold the pencil in a proper writing position. The teacher placed a pencil in front of the student and observed the manner in which an S grasped the pencil. Some Ss held the pencil in a proper position; however, others grasped the pencil at the wrong end. To compensate for this the teacher wrapped a piece of masking tape around the pencil at the point where Ss should place their fingers to facilitate proper pencil holding. The teachers felt that the proper way to hold the pencil did not need to be taught before Ss began to perform the program tasks. During instruction of the printing tasks, the teacher would model the correct position or physically prime fingers to the proper holding position. Subsequently, priming and imitative cues were decreased until an *S* could grasp the pencil in the proper position when starting to print. The visual cue of the masking tape was also removed as *Ss* developed the proper holding position.

Teaching Procedure:

The following procedure was utilized in teaching the *Ss* the appropriate stroke elements:

1) *T* would place a piece of primary writing paper (a printed model of a stroke element on the upper portion) in front of S_1 on the table. *T* would then say "S_1, make a (name describing stroke)" and gave S_1 the pencil. If S_1 printed an approximation of the stroke element *T* smiled, said, "Good", consequated with a consumable and said, "Let's try again."

2) *T* would model the correct response by printing the desired stroke element on the paper. Then *T* would say, "S_1, make a (name describing stroke)." and give S_1 the pencil. If S_1 printed an approximation of the stroke element, *T* smiled, said "Good", "Let's try again." If S_1 did not print an appropriate approximation, *T* said "Let's try again."

3) *T* would say "Let's make a (name describing stroke)" and physically guide the motor movements necessary to print the appropriate stroke element. When S_1 completed the stroke element with *T's* priming, *T* smiled, said "Good", and presented a writing paper to S_2, etc.

The above procedures were followed with each *S*. These procedures were also followed when teaching the printing of letters, names, and other words.

It should be noted that *Ss* were reinforced for successive approximations of the printed model. In other words, on the initial teaching trials of the stroke element or letter, an *S* was reinforced for gross approximations of the printed model. The teacher would disregard inappropriate lengths and did not require *Ss* to make motor responses in a specific location on the paper. However, on successive trials *Ss* were required to improve the approximation before receiving reinforcement (consumable consequence) from the teacher. Judgments of improved approximations were made by the individual teachers and measures of inter-teacher reliability were not obtained.

Results:

When Ss began school in the fall only one of the eleven Ss involved in the program could print some of the letters in his name. The remaining ten Ss usually responded with uncontrolled motor movements which resulted in pencil scribbles, rather than discrete lines. By the end of the school year, most of the Ss had made dramatic improvements in their printing skills. The one S who could print letters of his name at the beginning progressed to the point where he would print both his first and surname, his street address, the alphabet and the names of other Ss. Two Ss could print their first name and parts of their surname. Six Ss were printing at least the first letter of their first name. Only one S had not yet begun the printing of letters. He had demonstrated the ability to make the stroke elements involving straight lines, but had great difficulty with the curved stroke elements.

In order to keep a record of performance, the daily printing papers were kept in individual files. No attempts were made to rate the individual printing performances on a scale. Instead, the files served as the only performance records.

In order to communicate the improvement in performance, the actual works of individual students have been selected for presentation here. Figures 1A and 1B illustrate the improvement of one S's performance. Figure 1A is a printing paper from February and illustrates the S's disjointed motor movements in making the letter "L". Figure 1B is a printing paper from May and one can see substantial improvement. Although the size of the letters may not be appropriate, this was an acceptable approximation by this S in the judgment of the teacher.

The performance of another S is depicted in Figure 2A. This printing paper was completed in November and it can be seen that the S initially omitted letters in his name. Also, all letters were similar in size even though some should be upper case and the remaining should be lower case. At the end of the school year this S improved dramatically in his printing. The teacher would prepare a booklet of 5 or 6 printing papers stapled together, the S would work independently at completing the booklet and was even given an eraser which he used appropriately. Figures 2B, C, D, and E are printing papers from a booklet used in May. As can be discerned from Figure 2B, S was making letters in appropriate sizes but that S was not as precise when both his first name and surname were on one paper (Fig. 2D).

Discussion:

It is recognized by the writers that this program presents only the basic steps in developing pre-writing skills. Responses by all Ss were cued by a teacher model of the desired response. However, for most of the eleven Ss this was a first encounter with printing and these procedures seemed essential to induce performance. In future programming Ss will be required to print letters and words from dictation. However, it appears that other skills such as alphabet and rudimentary reading skills must be developed before one can eliminate the teacher's printing model.

Finally, it should also be noted that the first word to be taught to each S was his first name. It was determined by the teachers that the skill of printing one's name would be most functional to a young S. When the S could print his name on his personal belongings, papers, notes, etc., the child would hopefully demonstrate personal pride in his accomplishments. Once the child had been taught to print his name, instruction would be initiated on other words relevant to his environment.

2-6

Lori

Figure 1A

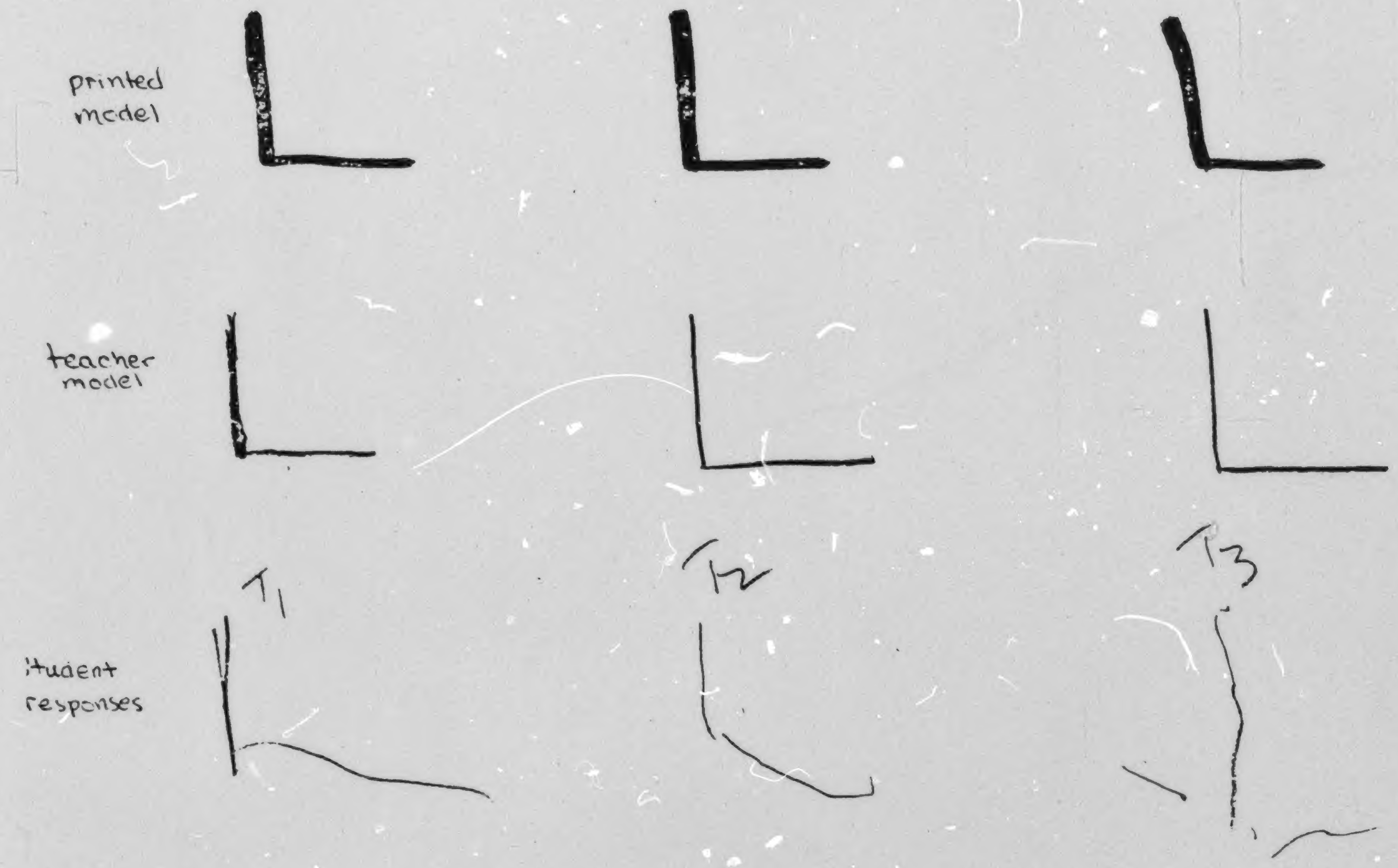
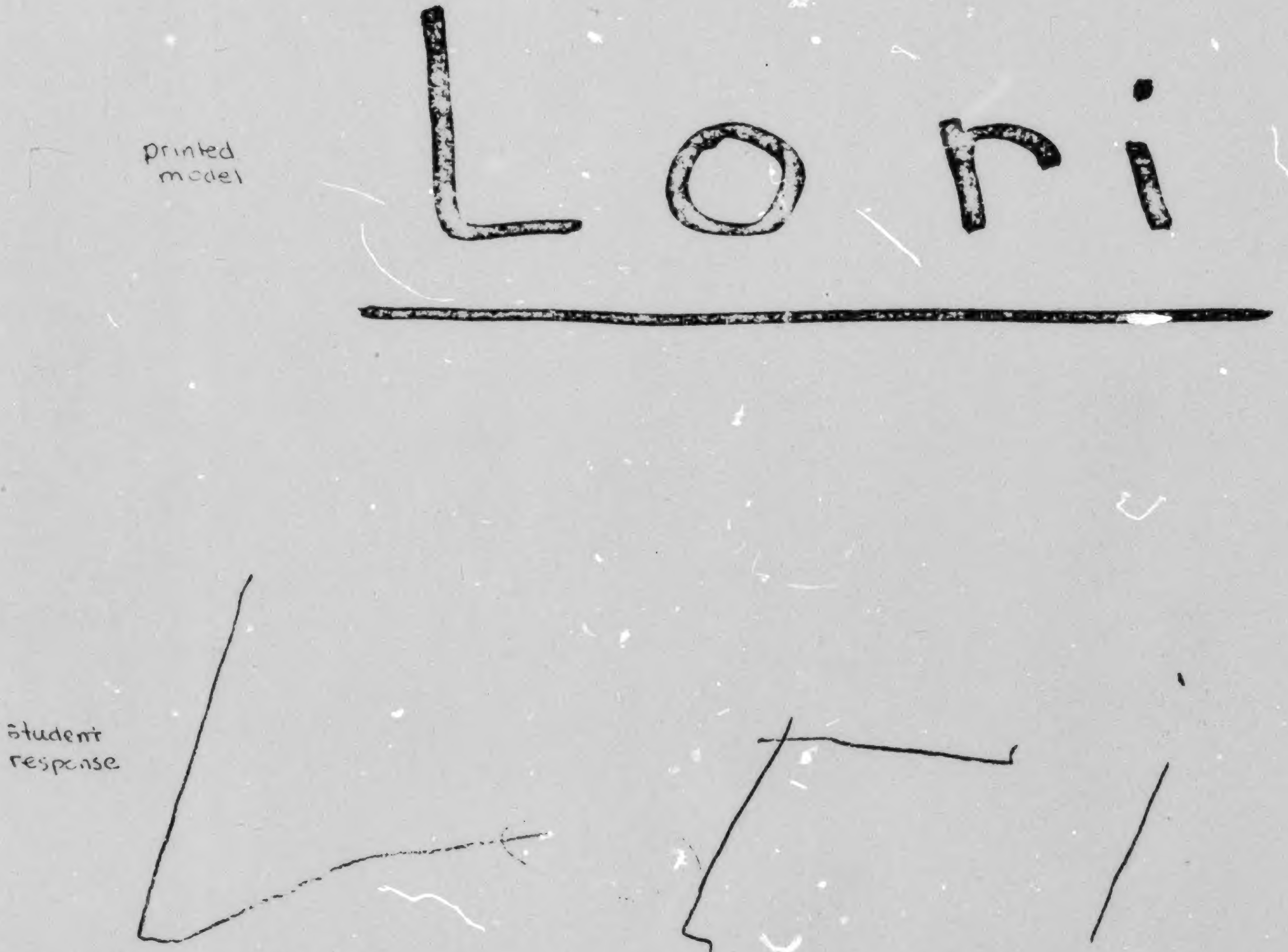

printed model
teacher model
student responses
T1
T2
T3

Figure 1B


printed model
Lori
student response

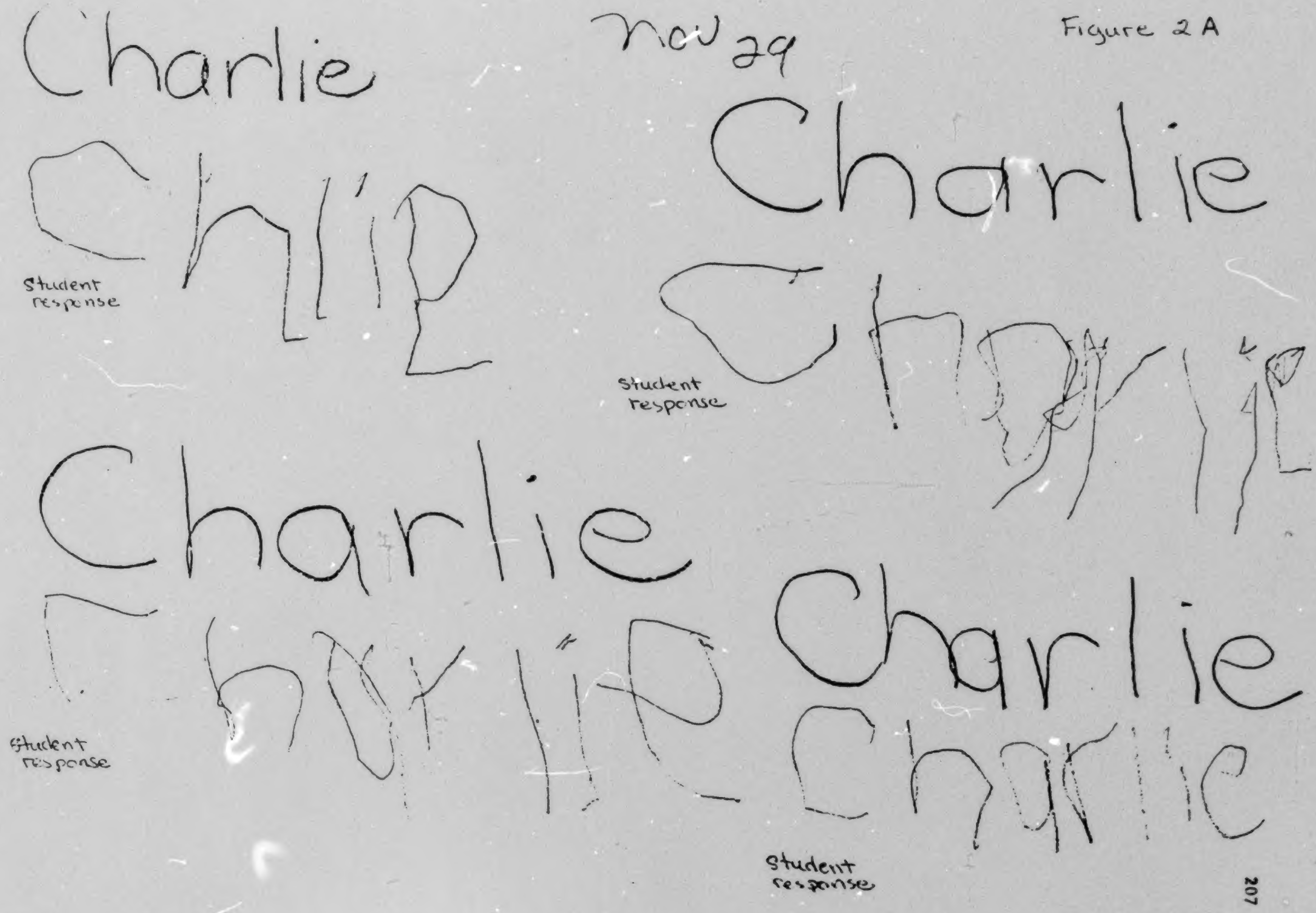

Charlie
nov 29
Charlie
Student response
Charlie
student response
Charlie
Student response
Charlie
student response

Figure 2A

Figure 2B

5/3

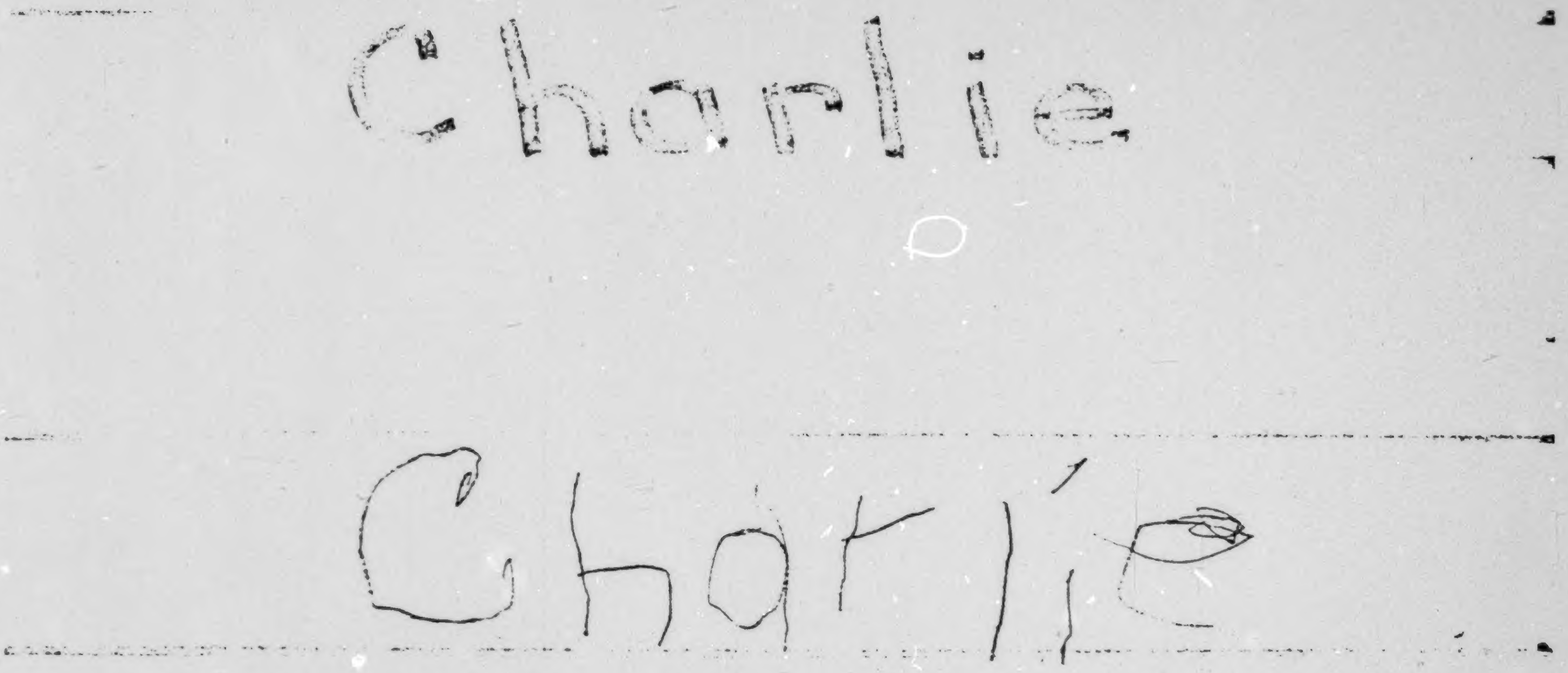

Charlie
Charlie

Figure 2C

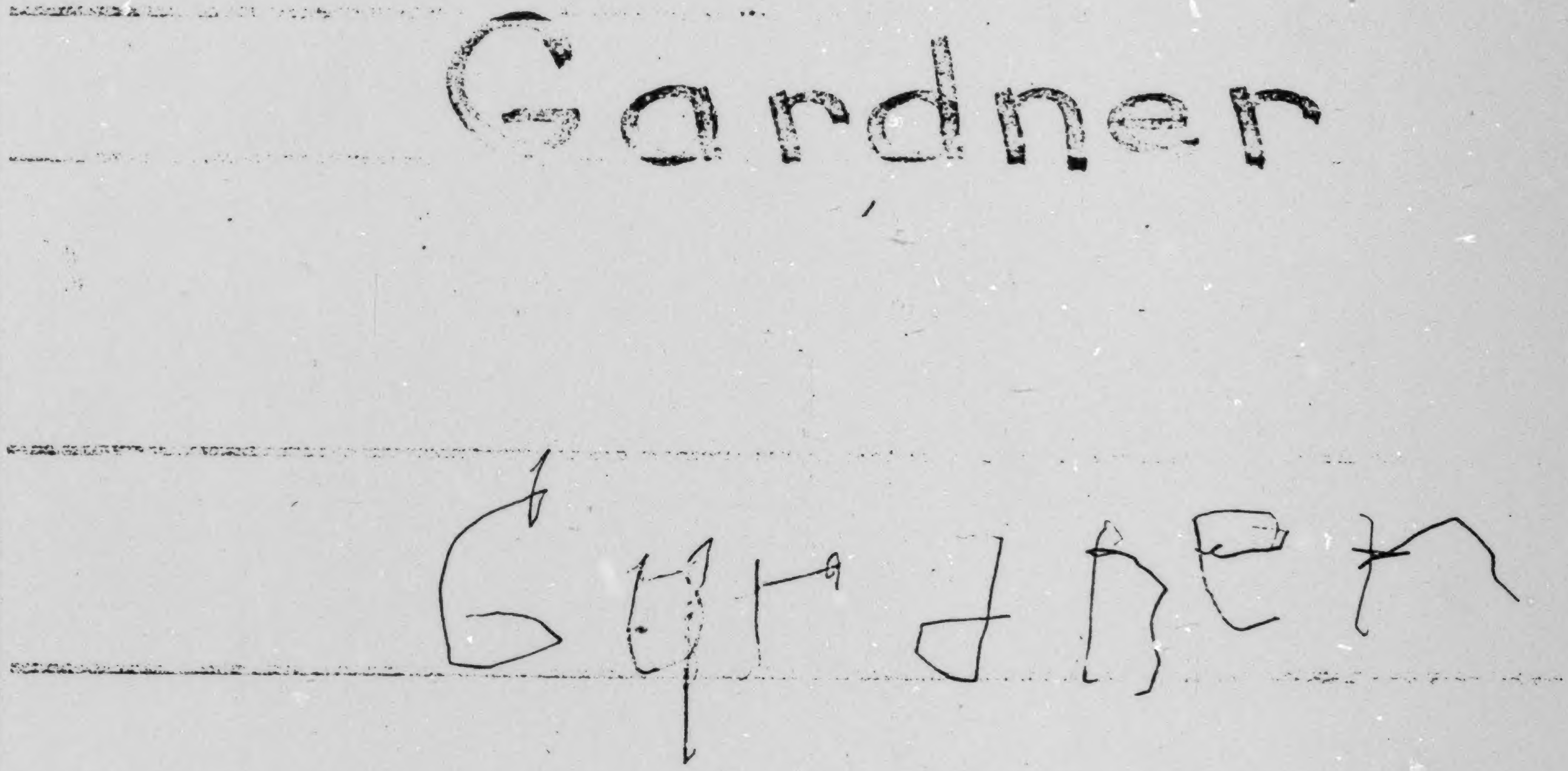


Figure 2D

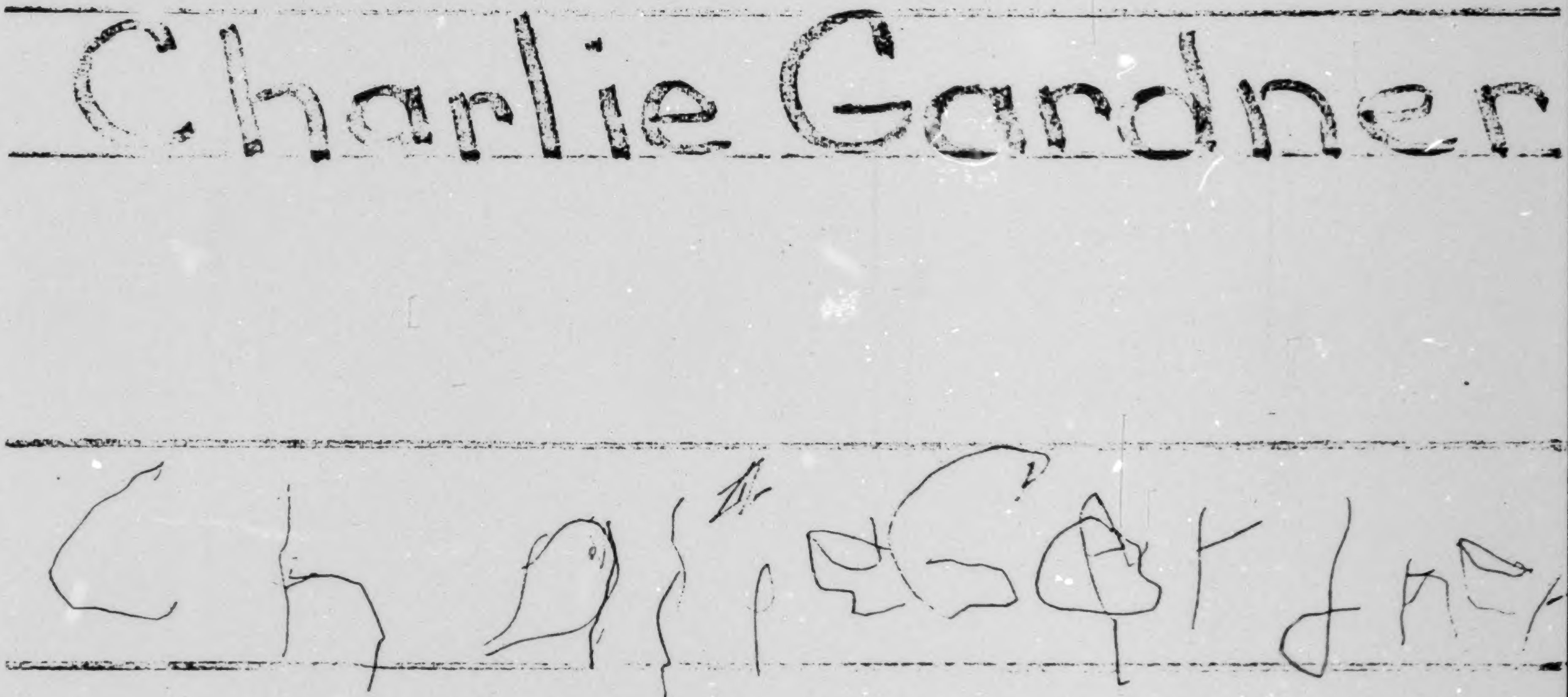
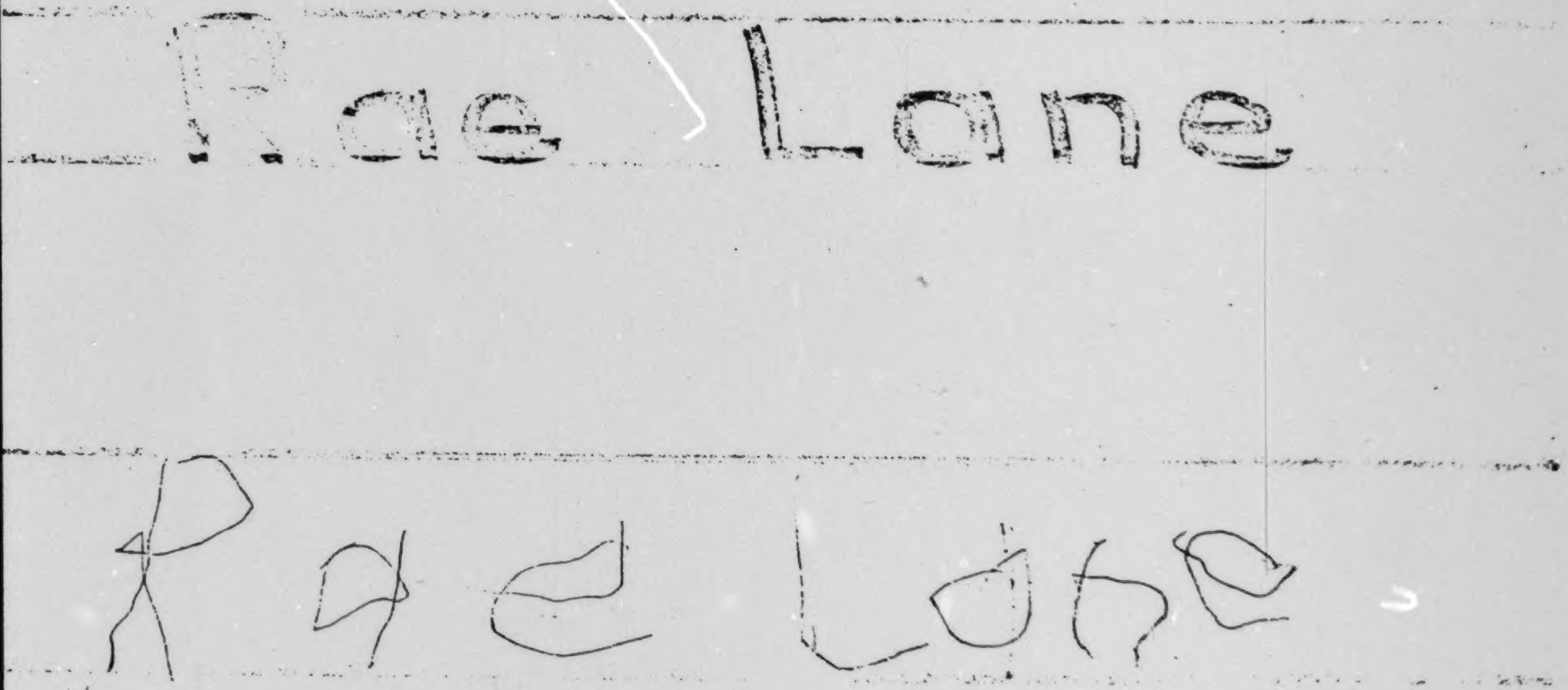

Charlie Gardner

Figure 2E



Shape Discrimination and Labeling Program

This program was concerned with teaching or verifying the existence of at least two kinds of skills: visually discriminating the difference between both two and three dimensional squares, circles, and triangles, and verbally labeling both two and three dimensional squares, circles, and triangles. The ability of the students to make the visual discriminations was operationally defined as an appropriate touching response, and the ability of the students to verbally label the shapes was defined as a judgment on the part of a teacher (reliability measures were not obtained) that the verbal response of the student communicated the label of the particular shape.

The program as it is presented here should be viewed as a standard from which an individual teacher should depart on the basis of his or her professional judgment rather than a rigid set of limits that cannot be violated. In fact, that is how the teachers of these classes viewed the program. That is, the program as originally designed was appropriate for some of the students and the guidelines were followed. For some students the program was too difficult and so the teachers made modifications that seemed to make the tasks easier. For some students the programs were too easy and more complex tasks were then introduced.

It should be emphasized, however, that in our view the level of difficulty of a particular task is a function of the performance of a particular student on that task. Our approach to determining the performance of a particular student on a task is to obtain continuous direct measures of the responses required by the task. In fact, we would hope that the reader could improve the program and such improvements would be based upon continuous direct measurement.

Students and Materials

Students (*Ss*). Thirteen *Ss* (Classes A and B) were involved and instruction was conducted so that individual performance and acquisition determined progress through the components of the program. Instruction was conducted in small group arrangements (see Room Diagrams in Appendices) of one teacher (T) to 2, 3, or 4 *Ss*.

Materials. The materials used were 2-dimensional (2-D) and 3-dimensional (3-D) representations of the geometric shapes: square, circle and triangle.

A. The 3-D materials are as follows:
   1) 2 wooden circles (red) 1½" diameter and ¼" thick,
   2) 2 wooden squares (red) 1½" x 1½" x ¼",
   3) 2 wooden triangles (red) 1½" x 1½" x 1½" x ¼".

B. The 2-D materials are as follows:
   1) 1 piece of white tagboard (10" x 10") with a circle 6" in diameter on it. The circle was colored with black magic marker.
   2) 1 piece of white tagboard (10" x 10") with a square 6" x 6" on it. The square was colored with black magic marker.
   3) 1 piece of white tagboard (10" x 10") with a triangle 6" x 6" on it. The triangle was colored with black magic marker.

Data sheets were also constructed to facilitate recording of each *S's* responses. A sample data sheet will be presented at the end of this paper.

Task Analysis

Phase I - Matching two shapes in response to visual and verbal cues.

The terminal objective is that *Ss* will touch the correct shape in a set of 3-D shapes when presented with visual and verbal cues to do so by *T*.

Set I

The teacher (T) places two 3-D shapes on a table in front of S. T then holds up a 3-D shape which matches one of the 2 shapes on the table. T then says "S, touch (name of shape held by T)". The arrangements of the shapes, the cues (C) of T and the responses required of Ss are as follows:

	Teacher Cue*			Student Responses
C_1	●	△	R_1	S touches circle.
C_2	○	▲	R_2	S touches triangle.
C_3	●	□	R_3	S touches circle.
C_4	○	■	R_4	S touches square.
C_5	▲	□	R_5	S touches triangle.
C_6	△	■	R_6	S touches square.

Set II:

T places three 3-D shapes on the table in front of S. T holds up a 3-D shape which matches one of the 3 shapes on the table. T says "S, touch (name of shape held by T)".

	Teacher Cue				Student Responses
C_1	●	△	□	R_1	S touches circle.
C_2	○	▲	□	R_2	S touches triangle.
C_3	○	△	■	R_3	S touches square.

Phase II - Touching a shape in response to a verbal cue.

The terminal objective is that S will touch the correct shape in a 3-D shape set when presented with a verbal cue by T.

* The shaded shape is the shape which T holds and verbally cues.

Set III:

T places *two* 3-D shapes on the table in front of *S*. *T* says, "*S*, touch (*name of shape held by T*)".

	*Teacher Cue**			*Student Responses*
C_1	●	△	R_1	*S* touches circle.
C_2	○	▲	R_2	*S* touches triangle.
C_3	●	□	R_3	*S* touches circle.
C_4	○	■	R_4	*S* touches square.
C_5	▲	□	R_5	*S* touches triangle.
C_6	△	■	R_6	*S* touches square.

Set IV:

T places *three* 3-D shapes on the table in front of *S*. *T* says, "*S*, touch (*name of shape held by T*)".

	Teacher Cue				*Student Responses*
C_1	●	△	□	R_1	*S* touches circle.
C_2	○	▲	□	R_2	*S* touches triangle.
C_3	○	△	■	R_3	*S* touches square.

Phase III - Verbally labeling 3-D and 2-D shapes

The terminal objective is that when *T* presents a 3-D or 2-D shape to *S* and says, "S, What shape is this?", *S* will verbally label the shape with the appropriate shape name.

---

* Shaded shape is the shape *T* uses for verbal cue.

Set V: 3-D

	Teacher Cue		*Student Response*
C_1	*T* presents square and says, "What shape is this?"	R_1	"Square"
C_2	*T* presents circle and says, "What shape is this?"	R_2	"Circle"
C_3	*T* presents triangle and says, "What shape is this?"	R_3	"Triangle"

Set VI: 2-D

	Teacher Cue		*Student Response*
C_1-C_3	Same as in Set V.	R_1-R_3	Same as in Set V.

Instructional Sequence

Step I - Prior to teaching, baseline measures were obtained of the ability of *Ss* to perform the tasks required of Sets I and II (Matching). The following baseline procedures were utilized:

1) *T* presented a 2-shape set of 3-D shapes on the table in front of S_1. *T* held up a 3-D shape which matched one of the shapes in the shape set and said, "S_1, touch (*name of shape held by T*)". Regardless of S_1's response, *T* said, "Thank you", recorded a "+" for a correct response or a "-" for an incorrect response or failure to respond, and presented a different cue to S_2, etc.
2) *T* used the procedures described above until each *S* responded to each of the 6 cues in Set I and each of the three cues in Set II on three consecutive occasions.

Step II - Subsequent to the baseline measurement of Sets I and II, *T* began instruction on Set I. The following procedures were used during instruction:

1) *T* presented a 3-D shape set consisting of *two* shapes on the table in front of S_1. *T* then held up a 3-D shape which matched one of the shapes

in the 2 shape set. *T* then said, "S_1, touch (*name of shape held by T*)". If S_1 touched the correct shape, *T* smiled, said "Good, great, etc.", consequated with a consumable (usually cereal or water), recorded a correct response on the data sheet, and presented a different cue to S_2, etc.

2) If S_1 failed to respond or touched an incorrect shape, *T* said "No", repeated the verbal cue "Touch (*name of shape held by T*)" and demonstrated the correct response by touching the shape. *T* then repeated the cue "S_1, touch (*name of shape held by T*)". If S_1 imitated T's demonstration, *T* smiled, said "Good", but did not provide a consumable consequence, recorded an "M" on the data sheet and presented a different cue to S_2, etc.

3) If S_1 did not touch the correct shape following *T's* demonstration *T* again repeated the verbal cue, "S_1, touch (*shape held by T*)", and primed the response by physically guiding *S_1's* hand until it touched the correct shape. When S_1 had touched the correct shape with *T's* prompting, *T* smiled, said "Good", and presented a different cue to S_2, etc. The amount of *T's* physical priming was reduced (faded) on each subsequent trial, until S_1 responded to *T's* demonstration. Subsequently, imitative cues were faded.

4) The procedures described in 1, 2, 3 were followed until an *S* correctly touched each of the 6 verbally and visually cued shapes in Set I on 3 consecutive occasions.

Step III - *T* repeated Step I above. That is *T* rebaselined *Ss* performance on Sets I and II.

Step IV - Procedures described in 1, 2, 3 of Step 2 were followed to teach Set II. These procedures continued until an *S* correctly touched each of the 3 visually and verbally cued shapes on three consectuvie occasions.

Step V - T repeated Step I above. That is T rebaselined Ss performance on Sets I and II.

Step VI- T obtained baseline measures of an S's ability to touch the correct shape in the shape set in response to a verbal cue (Sets III and IV). The baseline procedures are the same as described in Step I, with the exception that a visual cue was not presented by T.

Step VII- T began instruction of Set III. That is, Ss were taught to touch one shape in response to a verbal cue. The teaching procedures are similar to those described in Step II, with the exception that no visual cue was provided by T. Criterion was again set at 18 consecutive correct responses.

Step VIII- T repeated Step VI. That is, T rebaselined Sets III and IV.

Step IX- T used the same procedures as in Step VII to teach Set IV and these procedures were followed until an S responded correctly to each of the three verbally cued shapes on three consecutive occasions.

Step X - T repeated Step VI. That is, T rebaselined Sets III and IV.

Step XI- Baseline measures were obtained of each Ss ability to verbally label the three 3-D shapes (Set V). Baseline measures of performance to the 2-D shapes of Set VI were not obtained. The following procedures were used:

1) T held up a 3-D shape in front of S_1 and said, "S_1, What shape is this?" Regardless of S_1's response, T said "Thank you", recorded a "+" or "-" appropriately and gave a different cue to S_2 etc.

2) This procedure was followed until an S responded to each of the three shapes (circle, square, triangle) on three consecutive occasions.

Step XII- S was taught to correctly label the three 3-D shapes in Set V. The following teaching procedures were used:

1) T held up a 3-D shape in front of S_1 and said, "S_1, What shape is this?" If S_1 responded with the correct verbal label, T smiled, said "Good"

provided a consumable consequence, recorded a correct response on the data sheet, and presented a different cue to $\underline{S}_2$, etc.

2) If $\underline{S}_1$ incorrectly labeled the shape or failed to respond, *T* said, "No", presented the cue again, "What shape is this?" and verbally modeled the correct label. *T* then said, "What shape is this?" If $\underline{S}_1$ imitated *T's* model, *T* smiled, said "Good", recorded an "M" on the data sheet and presented a different cue to $\underline{S}_2$, etc.

3) If $\underline{S}_1$ failed to imitate *T's* model correctly, *T* said "No" and repeated the procedure described in 2 above. If $\underline{S}_1$ responded incorrectly again, *T* terminated $\underline{S_1\text{'s}}$ trial and went to $\underline{S}_2$.

4) This procedure was continued until an *S* correctly labeled each of the three shapes in Set V on three consecutive occasions.

Step XIII- *T* repeated baseline procedures described in Step XI on both Sets V and VI.

Step XIV- *T* used the teaching procedure described in Step XII to teach *Ss* to label the three 2-dimensional shapes of Set VI. (In actuality this step was not needed for all *Ss*.)

The instructional sequence described in Steps I-XIV was used with the majority of the 13 *Ss* involved. However, due to several *S's* performance, modifications were used to facilitate correct responding.

One example is that several *Ss* had difficulty in responding correctly to Set III (touching a shape in response to a verbal cue). *T* then divided Set III into three subsets: subset A - ● △ , ○ ; subset B - ○ □ , ◡ ▬; subset C - △ □ , △ ▨. When *S* reached criterion (16 consecutive correct responses) on each of these subsets, *T* returned to instruction of Set III.

Another example is that 3 Ss were taught Set I and Set III using the following subsets: subset A - ●△, △●; subset B - ●△, ○▲; subset C - ▲□, △■; subset D - ●□, ○■. It should also be noted that the 4 Ss who received modifications in their instruction will be delineated in the results section.

RESULTS

The performance of the 6 Ss in Classroom A is summarized in Table 1. The instructional sequence described in detail above was utilized with these 6 Ss.

Table I

Phases

		I		II		III	
		Matching		Touching		Labeling	
		Set I	Set II	Set III	Set IV	Set V	Set VI
Students	1	X	X	O			
	5	X	X	O			
	6	X	X				
	2	X	X	X	X		
	4	X	X	X	X		
	3	X	X	X	X	X	X

X = performance criterion reached on particular sets
O = performance criterion reached on subsets of Set III

As can be discerned from Table 1, S_1, S_5, S_6 performed at criterion on Sets I and II of Phase I; S_2 and S_4 performed at criterion on Phase I and Phase II; and S_3 performed at criterion on Phases I, II, and III. S_3 completed the entire program and therefore his performance will be presented in detail (Figures 1A, B, & C).

Baseline measures were taken on $\underline{S}_3$'s initial ability to match the 3-D shapes of Sets I and II. As can be discerned from Figure 1A, $\underline{S}_3$ made 0 of a possible 18 correct responses on Set I and 4 of a possible 9 correct responses on Set II during the baseline period (trials 1, 2, 3). Instruction was then initiated on Set I and $\underline{S}_3$ reached criterion after 11 teaching trials. During the second baseline period (trials 15, 16, 17) $\underline{S}_3$ maintained criterion responding on Set I and the number of correct responses to Set II increased dramatically. That is, performance was perfect on Set II with 9 consecutive correct responses during trials 15, 16, and 17.

$\underline{S}_3$'s performance pattern during Phase II (touching in response to a verbal cue) is depicted in Figure 1B. During the baseline period (trials 1, 2, 3) $\underline{S}_3$ performed perfectly on Set III and made a perplexing 5 of a possible 9 correct responses on Set IV. Then $\underline{S}_3$ was taught to touch the shapes of Set IV. A total of 34 teaching trials were needed before $\underline{S}_3$ reached the criterion of 9 consecutive correct responses.

During the second baseline period (trials 38, 39, 40) $\underline{S}_3$ maintained criterion responding on Set III and made 8 of a possible 9 correct responses on Set IV.

Figure 1C depicts $\underline{S}_3$'s performance pattern on Phase III (labeling 3-D and 2-D shapes). During the initial baseline period (trials 1, 2, 3) $\underline{S}_3$ made 4 of a possible 9 correct responses on Set V. $\underline{S}_3$ reached criterion on Set V after 25 teaching trials.

It should be noted that baseline measures of the ability of $\underline{S}_3$ to label the 2-D shapes of Set VI were not obtained during trials 1, 2, 3. However, such measures were obtained during trials 29, 30, and 31 and $\underline{S}_3$ responded perfectly. Perhaps, the most tenable hypothesis is that $\underline{S}_3$ acquired the labels to the 3-D shapes of Set V, and generalized those labeling responses to the 2-D shapes of Set VI.

The teacher in Classroom B used the modifications described earlier with 3 Ss, although no graphic data is provided. The performance of the 3 Ss (8, 10 & 14) is summarized in Table 2.

Table 2

Phases

		I					II				
		Matching Subsets					Touching Subsets				
		IA	IB	IC	ID	Set II	IIIA	IIIB	IIIC	IIID	Set I
Students	8	X	X								
	10	X	X								
	14	X	X	X	X	X	X	X			

X = criterion performance reached after teaching

It can be discerned from Table 2 that Ss 8 and 10 responded at criterion on subsets A and B of Set I. S_{14} performed at criterion during the matching phase and at the end of the school year had completed subsets A and B of Set III.

Four Ss in Classroom B were instructed with 2-D shapes instead of 3-D as it was hypothesized that they were sufficiently advanced to acquire skills related to 2-D shapes without prior training on 3-D shapes. The performance of these four Ss (9, 11, 12, & 13) is summarized in Table 3. All 4 Ss completed the entire program. The performance patterns of these 4 Ss were very similar and many times Ss responded correctly on the initial baseline trials.

Table 3

Phases

		I		II		III	
		Matching		Touching		Labeling	
		Set I	Set II	Set III	Set IV	Set V	Set VI
Students	9	X	X	X	X	X	X
	11	X	X	X	X	X	X
	12	X	X	X	X	X	X
	13	X	X	X	X	X	X

X = criterion performance reached before or after teaching

Sample Data Sheets

Shape Discrimination

Date: ____________________ Phase: ______________

Trial: ____________________ Set: ______________

Student Name	● △	○ ▲	● □	○ ■	▲ □	△ ■	total no. correct

Date: ____________________ Phase: ______________

Trial: ____________________ Set: ______________

Student Name	● △ □	○ ▲ □	○ △ ■	total no. correct

Figure 1A

Matching Similar Shapes
(S #3)

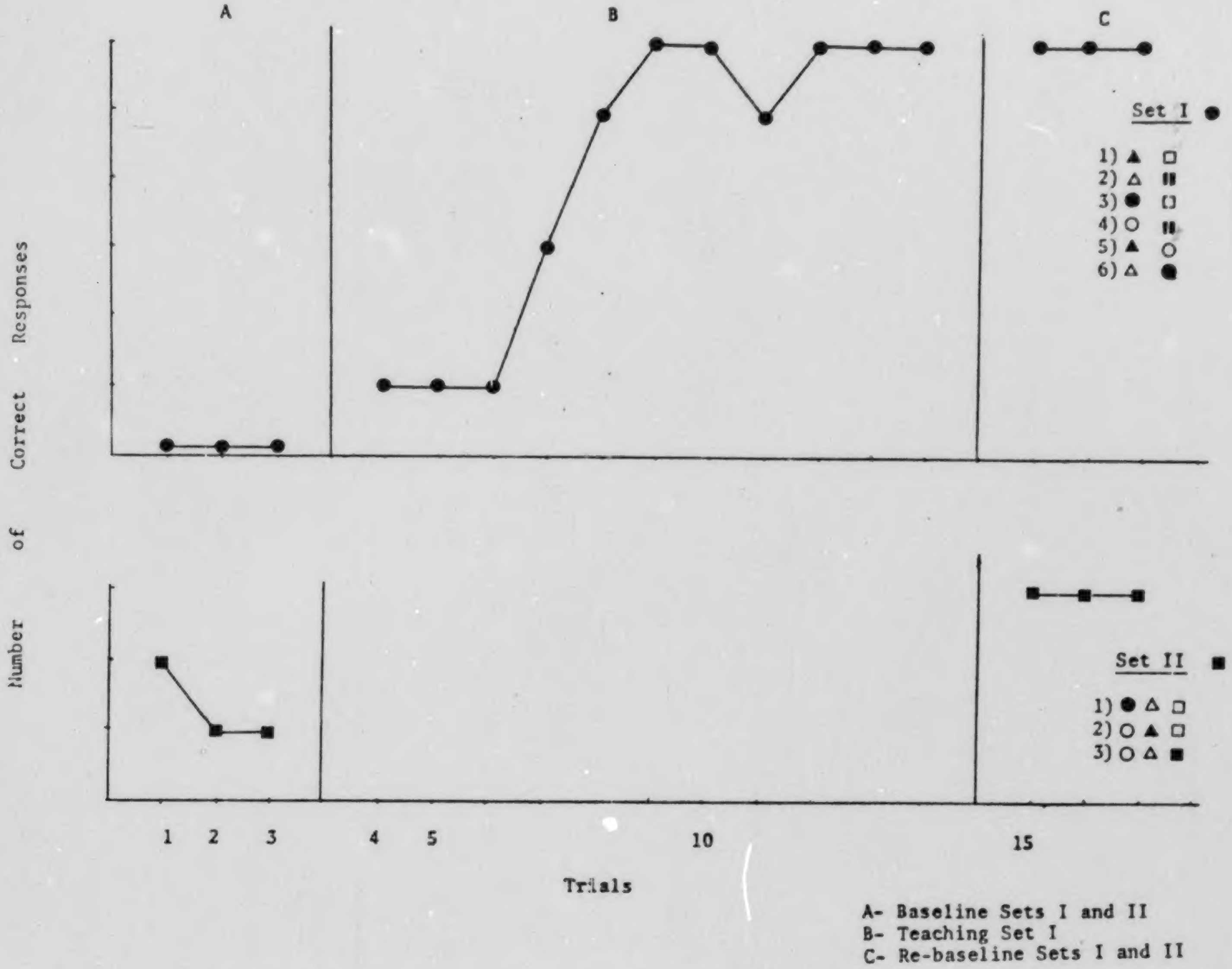
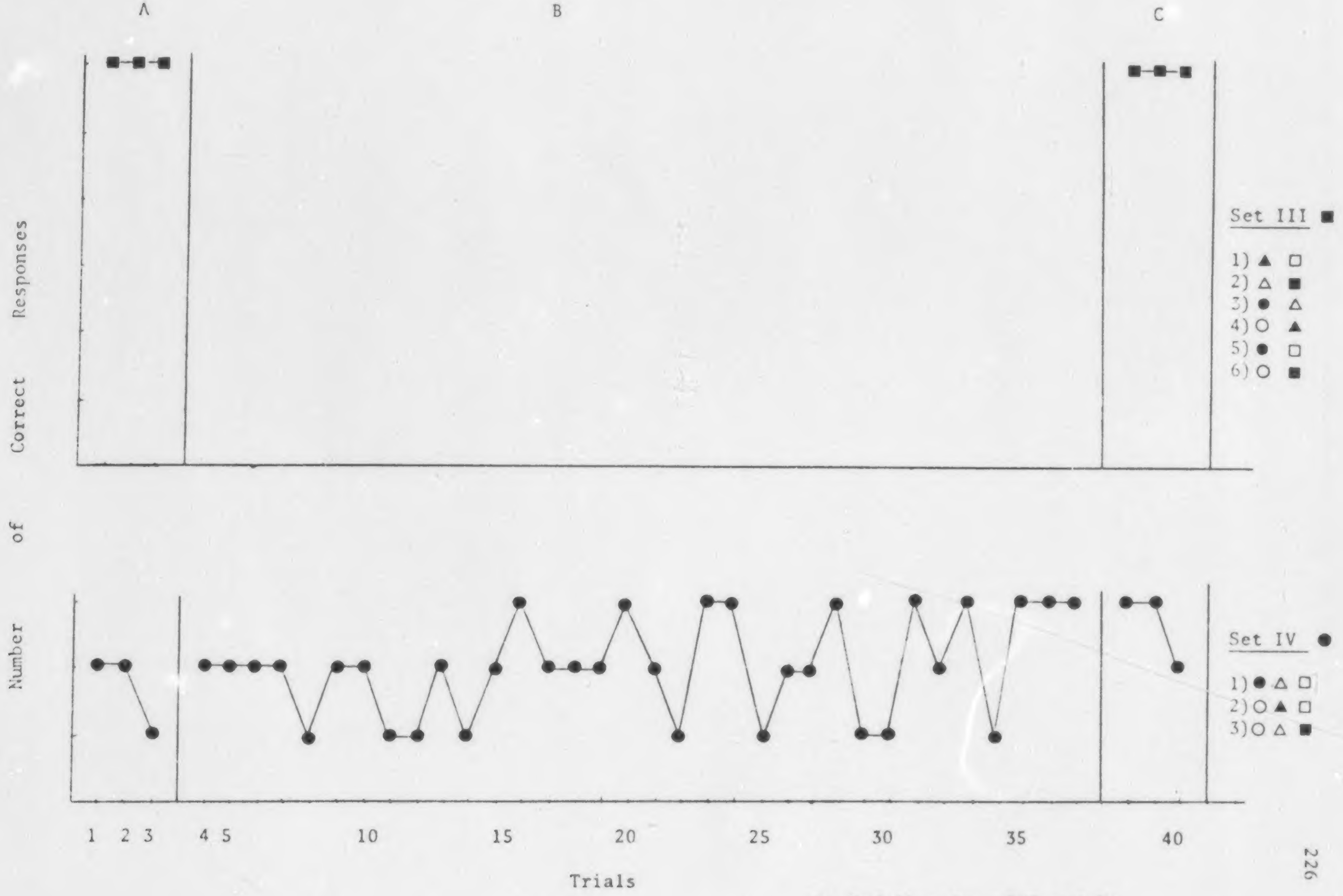


Figure 1B

Shape Discrimination (S$_3$)

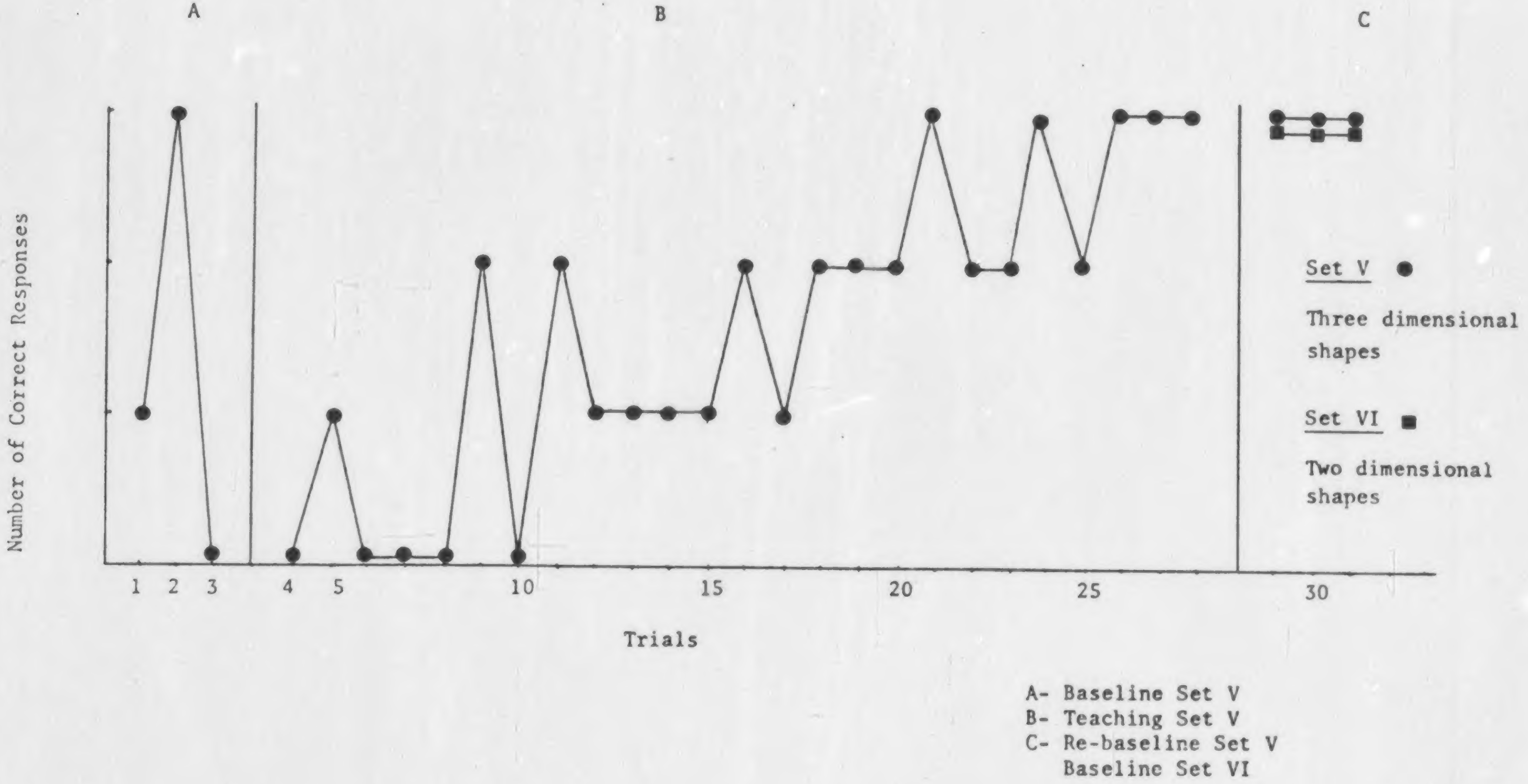


A- Baseline Sets III and IV
B- Teaching Set IV
C- Re-baseline Sets III and IV

Figure 1C

Verbal Labeling of Shapes

S_3



Behavior Management Problems

The fact that this paper concerning the management of behavior problems is included near the end of this report reflects a rather subtle bias of the writers. We believe the chief responsibility of a classroom teacher is to teach the students in his or her charge the pre-academic and academic curriculia necessary for effective community functioning. Intervention programs which focus upon the management of behavior as an objective in itself can only be transitory and in our view can only be justified in cases of extreme behavior problems.

Severely handicapped students manifest behavior problems that are significantly different, if only in degree, than those manifested by other students served by public schools. We recognize that due to the extreme frequency, intensity or duration of certain types of behaviors, some must be dealt with prior to the start of academic instruction. Behavior problems such as self-abuse, aggression toward others or loud crying are either incompatible with the student acquiring the new skills, or disruptive to such an extent that the acquisition of necessary skills by other students in the class is prevented or impeded. However, the most frequent strategy utilized by the teachers in Classrooms A and B was to manage behavior problems in conjunction with the teaching of pre-academic or academic skills.

The following three factors were considered to be of primary importance in the management of classroom behavior problems:

1) Physical structure and organization of the classroom;
2) Tasks and materials that comprised the curricula;
3) Teacher behavior.

In the classrooms discussed in this report, the physical environment was arranged to support small group instruction. Such instruction took place at small tables with students in close physical proximity to the teachers. Groups receiving instruction concurrently were separated from one another by screens, cabinets, pianos and distance. The routine of the classroom was consistent from day to day. This minimized confusion as to what would occur next at any given point in the day and reduced the lulls between classroom activities. It has been our experience that most behavior problems occur during breaks in instruction or between a student's turn at a task. The tasks in which the students engaged were generally alternated between hilly structured small group instruction and less structured large group activities. Attempts were made to put the teacher's effort into the structuring of classes and the planning of the tasks as a means of preventing behavior problems, rather than attempting to correct such problems after their occurrence.

The tasks and materials that comprised the curricula of the two classrooms were individually designed for each student. Individual progress of each student was assessed daily and tasks were added, deleted or modified accordingly. A continuous attempt was made to insure that the materials presented, the responses required and the instructional programs in general, allowed each student to acquire the skills desired by the teachers.

The behavior of all teachers involved in both classrooms was assessed continuously. Discussions occurred almost daily in relation to what behaviors were of concern and what would be done when that behavior occurred. This lead to the consistent handling of the behavior problems that did arise. In general, teachers were prepared for behavior problems before they occurred and had determined what to do if they did occur. Excellent reviews concerning the effects of teacher behavior upon the behavior of his or her students are listed at the end of this program; therefore, only an outline of the tactics utilized in Classrooms A and B are presented below:

1) catching the students being good - thus reinforcing behavior which is incompatible with problem behavior;
2) ignoring undesirable behavior and removing consequences other than teacher attention for that behavior;
3) consequating *other* students for appropriate behavior instead of responding to the undesirable behaviors of one student;
4) punishing undesirable behavior while rewarding appropriate alternative behaviors.

Presented below, again in outline form, are several examples of behavior problems encountered during the school year and the programs developed to deal with that problem.

1) $\underline{S_2}$ was distracted easily from the instructional task, spending a great deal of her time looking about the room. In an attempt to increase $\underline{S_2}$'s appropriate behavior, $\underline{S_2}$ was reinforced when she did look at the task and *T*. Other students who displayed the appropriate behaviors were reinforced loudly and lavishly when $\underline{S_2}$ was turned away from the task. Subsequently eye contact with *T* and looking at the required task increased.
2) At the start of the school year $\underline{S_3}$ frequently flapped his arms, jumped up and down, and banged his head. *T* would ask $\underline{S_3}$ to stop (warning) and if he did not, he was isolated in a small room for two minutes (timing of the two minutes did not begin until $\underline{S_3}$ was quiet). The undesirable behaviors decreased to a very low frequency of occurrence following the first few isolation periods.
3) $\underline{S_5}$ initially presented extreme instructional difficulties due to the large variety and high frequency of undesirable behaviors manifested. Among the most difficult from a teaching standpoint was the inappropriate use of his hands during group instruction. $\underline{S_5}$ was constantly hitting other students, throwing instructional materials, drumming on the table and so on. *T* chose to reduce these undesirable behaviors by reinforcing an incompatible response, $\underline{S_5}$ sitting with his hands in his lap. Systematic reinforcement of $\underline{S_5}$'s sitting with his hands in his lap lead to a dramatic increase in that behavior and a concurrent decrease in the inappropriate hitting, throwing and drumming.

In summary, the classrooms were arranged and organized; curricula were designed and modified; and teacher behavior was carefully controlled in an effort to prevent classroom behavior problems. Success in this area is, of course, difficult to assess. However, the general improvement in the student's behavior as the school year progressed and the fact that these students (initially displaying pervasive and intense behavior problems) were taught successfully by all of the 10 teachers involved in both classrooms, lends some credence to the contention that the management techniques employed were effective.

References

Becker, W. C. *Parents Are Teachers*, Research Press, Champaign, Ill., 1971.

Becker, W. C., Engelmann, S. & Thomas, D. R. *Teaching: A Course in Applied Psychology*, Science Research Associates, Palo Alto, 1971.

Becker, W. C., Thomas, D. R., & Carnine, D. *Reducing Behavior Problems: An Operant Conditioning Guide for Teachers*, ERIC Clearinghouse on Childhood Education, Urbana, Ill., 1969.

Madsen, C., Becker, W., & Thomas, D. Ruler praise and ignoring. Elements of elementary classroom control. *Journal of Applied Behavior Analysis*, *1*, 1968.

Madsen, C. H., & Madsen, C. *Teaching discipline: Behavioral principles toward a positive approach*. Boston: Allyn and Bacon, Inc., 1970.

O'Leary, K. D., & Becker, W. D. Behavior modification of an adjustment class: A token reinforcement program. *Exceptional Children*, 1967, *33*(9), 637-642.

O'Leary, K. D., Becker, W. C., Evans, M. B., & Saudargas, R. A. A token reinforcement program in a public school: A replication and systematic analysis. *Journal of Applied Behavior Analysis*, 1969, *2*(1), 3-13.

Patterson, G. R., & Gullion, M. E. *Living with children*. Champaign, Ill.: Research Press, 1969.

Patterson, G. R. *Families: Applications of social learning to family life*. Champaign, Ill.: Research Press, 1971.

Patterson, G. R., & Brodsky, G. Behavior modification for a child with multiple problem behaviors. *Journal of Child. Psych. and Psychiatry*, 1966, *7*, 277-295.

Patterson, G. R., Jones, R., Whitter, J., & Wright, M. A. A behavior modification technique for the hyperactive child. *Behav. Research and Therapy*, 1965, *2*, 217-226.

To Those Who Are Looking For Student 7

As one reads the instructional programs presented in this report, it should be apparent that one student has not been mentioned. This student, $\underline{S}_7$ in Classroom A (see Appendix A) is totally blind and for this reason was involved in individualized instructional programs for the majority of the year.

Before the activities related to $\underline{S}_7$ are described the reader should be informed of the following: 1) The teacher of Classroom A had no previous experience or training with blind-retarded students and obviously functioned from a pronounced instructional void; 2) $\underline{S}_7$ exhibited many inappropriate classroom behaviors which required management prior to the initiation of academic instruction; 3) The academic progress of $\underline{S}_7$ was quite erratic and non-existant on some tasks.

The teacher did, however, attempt to develop a curriculum for $\underline{S}_7$ which would help him become more independently mobile, develop several basic receptive and expressive language skills, and to increase productive use of his fingers and hands as guides to his environment. The tasks concerned with mobility proved to be the most successful in that $\underline{S}_7$ acquired many of the mobility skills during instruction and maintained a high level of performance after instruction was terminated. However, success was not as readily attained on the academic tasks concerned with receptive language. Generally $\underline{S}_7$ would reach criterion on initial phases of a program, but criterion performance would not be maintained during subsequent trials on the same task and efforts to induce progress on the more complicated phases of a program were ineffective.

$\underline{S}_7$ also exhibited several extremely maladaptive behaviors which interfered directly with instruction. For example, $\underline{S}_7$ would fall asleep if the teacher failed to attend to him for more than two minutes. Therefore, it was imperative that S_7 be related to on a one-to-one basis, and that he received a great deal of physical stimulation and consequation for in seat behavior with his head in an upright position to decrease the probability of sleeping. Another interfering class of behaviors may be referred to as tantrums which included biting (himself and others), scratching, kicking and screaming. The teacher would have to physically restrain S_7's hands and feet so that he could not harm himself or her, and when the above behaviors ceased the teacher would immediately reinforce the quiet behavior with a piece of cereal and a hug. During the first months of school, the amount of time required to gain control over the sleeping and tantrum behaviors consumed up to one half of the instructional time available. Thus, it was extremely difficult to provide S_7 with a consistent learning environment. However, as these behaviors decreased in frequency and intensity, S_7 began to make substantial gains in other areas.

Instructional Arrangement

In order to decrease the amount of interference with the rest of the class, S_7 was seated at a table behind the teacher's desk (see room diagram in Appendix B). This area was also chosen to facilitate independent mobility on the part of S_7. From the classroom door, S_7 could guide himself along the wall until he reached his table or he could use the teacher's desk as a reference point. Mobility training was conducted outside of the room in the school corridor. This arrangement provided more freedom of movement and did not interfere with the academic programs of the other students.

For the first four months of school, S_7 received mobility and academic instruction from either the teacher or the aide. This arrangement was used to provide some consistency in S_7's environment by having him deal with only two people. As the year progressed, student teachers were also involved in the instruction of S_7.

Mobility Training

One of the primary objectives for S_7 was for him to become independently mobile in the school environment. Three major programs were initiated throughout the year: 1) Hall Mobility; 2) Directional Mobility; and 3) Adaptive Mobility. Hall mobility was concerned with developing S_7's skills in walking down the school corridor *without* the physical assistance of another person. S_7 was encouraged to use his hand as a guide along the wall and therefore the wall could be used as a reference in navigating corners. The second program, directional mobility, was designed to develop the skills of locating the directions from which a person's voice was projected. Thus, S_7 could follow a person by locating the direction of his voice and eventually S_7 might be taught to locate dangerous sounds (cars) which should be avoided. The third program, adaptive mobility, was primarily concerned with developing S_7's ability to circumvent obstacles which he encountered as he moved about the school.

A. Hall Mobility

The terminal objective for this program can be defined as: When verbally directed by *T* to "Come here" S_7 will walk forward at least 5 ft. without *T*'s assistance (S_7 could use and was encouraged to use his hand as a guide along the wall).

At the beginning of the school year S_7 would usually walk a maximum distance of one foot without assistance. Therefore, this program was designed to increase S_7's unassisted walking distance and also to teach S_7 to respond to the verbal cue "Come here." No precise baseline measures were taken on S_7's ability to respond to this task, but the teacher had informally observed S_7's responses to similar verbal directives.

The following teaching procedure was used:

1) *T* would stand directly in front of S_7 and say "Come here." If S_7 moved forward more than a foot in distance before stopping *T* would immediately say "Great job," consequate with a consumable (cereal) and record the distance walked on a data sheet (distance approximated to the nearest foot).

2) If S_7 failed to respond to *T*'s cue or stopped after walking a distance of less than one foot, *T* would repeat the cue "Come here" and physically prime S_7 by gently tugging at his arm until S_7 moved forward at least 1 ft. *T* would remove his arm and immediately say "Great job" and record a "P" on the data sheet.

3) On subsequent trials *T* reduced the amount of physical priming until S_7 responded to *T*'s cue "Come here."

4) After S_7 would walk unassisted a specific distance, *T* would increase by 1 ft. the distance required of S_7 to walk in order to receive a piece of cereal.

5) These procedures were continued until S_7 walked a distance of at least 5 ft. unassisted on 5 consecutive occasions.

Results

The performance of S_7 was very erratic on the first 62 teaching trials. That is, one day S_7 would not respond at all and on the next day he would walk 5 ft. unassisted. *T* hypothesized that S_7's failure to respond might have been due to the fact that S_7 waited until *T* primed him in order to get physical contact. It was then decided to develop an apparatus which could be used in prompting S_7 to walk. A broom handle (4 ft. long) with a wire (2 ft. long) attached to the end of it (the end of the wire was curved into a hook) was devised by the aide. When S_7 failed to respond to *T*'s verbal cue "Come here," *T* would place the hook around S_7's lower leg and gently pull. When S_7 began to move, *T* would remove the hook. The use of this apparatus was instituted on trial 63 and performance improved dramatically. On trial 76, the teacher began to fade (reduce) the use of the hook apparatus. After 110 teaching trials, S_7 walked at least 5 ft. unassisted on five consecutive trials and this program was discontinued on a formal basis.

On numerous occasions throughout the school day S_7 would be required to perform this same task on an informal basis. For example, in going to the bathroom a T would stand in front of S_7 and verbally cue S_7 to walk to him. S_7 would be continually verbally praised by T for walking unassisted. As the year progressed T would increase the distance between him and S_7 and also decrease the amount of verbal praise given. By the end of the school year, S_7 could walk unassisted from the boy's bathroom to his own classroom (approx. distance of 75 ft.) with very little, if any, teacher encouragement.

B. Directional Mobility

The terminal objective for this program may be defined as follows: When verbally directed by T to "Come here," S_7 will turn his body so as to face the direction from which T's voice came and walk the distance to T unassisted.

Instructional Sequence

Phase I - T stands approximately 2 ft. away from S_7 either to the left side, right side, front, or back.

Phase II - T stands approximately 3 1/2 ft. away from S_7 either to the left side, right side, front, or back.

Phase III - T stands approximately 5 ft. away from S_7 either to the left side, right side, front, or back.

Teaching was conducted in the same manner as hall walking. The criterion for each phase was set at correct responding to the verbal cue, "Come here" from each of the four sides on three consecutive trials, or a total of 12 consecutive correct responses.

Results and Discussion

Phase I - criterion reached after 4 teaching trials.

Phase II - criterion reached after 10 teaching trials.

Phase III - criterion reached after 27 teaching trials.

S_7 demonstrated the ability to locate the direction from which *T*'s voice came. Additional programs were conducted using bells as the sound stimulus and S_7 was taught to extend his hand in the direction of the bell.

C. Adaptive Mobility

The terminal objective for this program can be defined as follows: When S_7 confronts an obstacle directly in front of him in his walking path, he will circumvent the obstacle and continue in his original walking path.

Teaching Procedure

Initially a large wastebasket was positioned directly in front of S_7 while he was walking along a wall. As soon as S_7 came in contact with the wastebasket, *T* would say "Go around" and physically prime S_7 by guiding him around the basket and placing S_7's hand back on the wall. On subsequent occasions, *T* would reduce (fade) the amount of physical prompting until S_7 would respond to the cue "Go around." Eventually *T* faded the verbal cue "Go around" and S_7 would respond independently of teacher cues.

When S_7 could circumvent the wastebasket unassisted on 3 consecutive occasions, *T* initiated the same procedure using a chair as the obstacle.

The third obstacle presented to S_7 was an open door. When S_7 confronted an open door he would go into a room and therefore an open door might be considered an obstacle in his walking path in route to a designated location. The teaching procedure used was similar to that used with the wastebasket and chair, with the exception that the verbal cue was "Open door, keep coming" was substituted. As in the previous teaching procedure physical priming was used to induce correct responding and eventually faded along with the verbal cue.

It should be noted that S_7 did complete all three major program objectives (Hall Mobility, Directional Mobility and Adaptive Mobility). However, informal instructional sessions were continued throughout the year on these three tasks. S_7 was given additional instruction in walking up and down stairs and ramps, around corners, and increased distances of unassisted walking. Eventually the door of Classroom A was marked with sandpaper on either side of the doorway about 3 ft. from the floor. This cue was added to facilitate S_7 finding the correct open door to enter.

Verbal Direction Following

S_7 was taught to respond to four one-component verbal directions ("Stamp feel", "Raise hands", "Clap hands," and "Stand up"). The teaching procedure used was similar to that described earlier in the Verbal Direction Following program used with the other *Ss* in the two classrooms. However, auditory modeling of the desired response was used *only* with the directions "Clap hands" and "Stamp feet" as S_7 could auditorially discriminate the difference between these two responses. The direction "Shake head" was *not* used with S_7 because shaking his head was one of the stereotypic behaviors that *T* did not want to reinforce.

Initially baseline measures were obtained on S_7's ability to respond to the four verbal directions. During a three trial baseline period, S_7 made 1 of a possible 12 correct responses. The performance of S_7 was extremely erratic and he reached criterion after 139 teaching trials. Criterion was set at correct responding to each of the four directions on 3 consecutive trials or a total of 12 consecutive correct responses.

Location of Body Parts

The teacher judged that it would be important for S_7 to learn the location of specific body parts. In response to a verbal cue by T ("Touch (head)"), S_7 was to touch the appropriate body part with his hand. When S_7 failed to respond to a verbal cue T physically primed the correct response and subsequently faded the amount of physical priming until S_7 responded correctly without T's assistance.

Two body parts were selected for instruction (head and nose). During the initial two trial baseline period S_7 made 0 of a possible 4 correct responses. During the teaching of the location of these two body parts, T added several cues to induce correct responding. After 230 teaching trials S_7 had not yet reached criterion of correct responding to both body parts on three consecutive trials. T hypothesized that head and nose were too close in proximity and S_7 could not adequately discriminate the two locations. Thus T modified the program and selected head and foot as the two body parts to be taught. After 45 teaching trials S_7 reached criterion of perfect responding on three consecutive trials. It should be noted that S_7 did not maintain perfect responding on subsequent trials and therefore teaching of this task continued on a daily basis to secure consistent criterion performance.

Tasks Related to Receptive Language

As S_7 was not communicatively verbal, several programs were designed and implemented to develop S_7's receptive language skills and to facilitate usage of hands as communication vehicles. The first instructional task was to develop a tactile scanning response so as to provide a means by which he could tactually attend to the objects placed in front of him. Initially a group of objects was lined up in front of $\underline{S}_7$ on the table and $\underline{T}$ would physically guide $\underline{S}_7$'s left hand ($\underline{S}_7$ was left-handed) across each of the objects as $\underline{T}$ verbally labeled each one. Subsequently, $\underline{T}$ would fade the amount of physical priming until $\underline{S}_7$ would move his hand from object to object without physical assistance from $\underline{T}$ ($\underline{T}$ continued to label each object as $\underline{S}_7$ touched it).

During the teaching of a specific receptive language skill, $\underline{S}_7$ would first tactually scan the stimuli presented to him (with or without physical assistance from $\underline{T}$), then $\underline{T}$ would say "pick up (object label)" or "stop on (texture label)". The appropriate responses by $\underline{S}_7$ were to pick up the correct object or to tap his hand on the correct texture sample. It was necessary to require these discrete responses in order for $\underline{T}$ to accurately record a response. Also, physical priming of the correct response was used to induce correct responding and subsequently faded as described in earlier programs.

It should be noted again that $\underline{S}_7$ did progress through the initial phases of a program, but did not progress through more complex phases. Therefore, $\underline{T}$ would reinstitute instruction on the initial phases which often would require numerous trials to rereach criterion. It was also extremely difficult for $\underline{T}$ to reliably record some of $\underline{S}_7$'s responses. For example, $\underline{S}_7$ would pick up an incorrect object, drop it and then pick up the correct object. As a result, the performance pattern of $\underline{S}_7$ was extremely inconsistant and inconclusive. In the future we hope to develop more precise methods of teaching tactile scanning methods and discrete responses to verbal directions in order to facilitate correct responding on these types of tasks.

In order to communicate to the reader the program sequence of the tasks presented to *S_7*, we have delineated the teacher cues and responses required by several receptive language tasks.

Object Discrimination

Set I ball
block
beanbag

Phase I *T* would place the three objects on the table in front of *S_7*, and *S_7* would tactually scan the objects. *T* then said "Pick up ball." *S_7* was to pick up the ball and *not* pick up either of the other two objects. Criterion was set at 6 consecutive correct responses.

Phase II *T* used the same procedure, but the verbal cue was "pick up beanbag." Criterion was set at 6 consecutive correct responses.

Phase III *T* used the same procedure, but the verbal cue was "pick up block." Criterion was set at 6 consecutive correct responses.

Phase IV *T* used a similar procedure with the exception that one trial consisted of all three verbal cues being issued. That is, *S_7* would respond to "Pick up ball," then "Pick up block," then "Pick up beanbag" and *S_7* could make 0-3 correct responses on a trial. Criterion was set at perfect responding to each of the cues on 3 consecutive trials or a total of 9 correct consecutive responses.

Set II cup
spoon
napkin

Instruction of Sets I and II occurred during different periods in the school day. The instructional sequence for Set II is the same as that described for Set I. It should also be noted that the arrangement of the objects was selected randomly, but that T would note the location of the cued object on the data sheet as L (left), M (middle), or R (right) when S_7 responded correctly.

Texture Discrimination

Two texture samples were glued on a large piece of tagboard and a vertical line of tape was placed between them to facilitate discrete tactile scanning responses.

Set I	Rough - Smooth	(rough was on S_7's right side)
	Fuzzy - Soft	(fuzzy was on S_7's right side)
	Rough - Smooth	(smooth was on S_7's left side)
	Fuzzy - Soft	(soft was on S_7's left side)
Set II	Rough - Smooth	(rough - left side)
	Fuzzy - Soft	(fuzzy - left side)
	Rough - Smooth	(smooth - right side)
	Fuzzy - Soft	(soft - right side)
Set III	Rough - Smooth	(The location of the texture cues was randomly chosen by T)
	Fuzzy - Soft	

Comment

Not to acknowledge the extraordinary assistance, dedication and crucially important contributions made by several other extremely concerned persons would be unforgivable. Thus, the writers in general and the teacher of Classroom A in particular would like to extend a sincere and warm "thank you" to Larry Douglass, Ruth Bartlett, Andrew Papineau and Ruth Woodworth.

Appendix A

Student Information

Appendix A contains three different bodies of information related to the 14 students:

A) Written information from the student's folder

B) The initial behavioral observations of the students by the classroom teacher

C) Information obtained from the parents in a parent-teacher interview prior to the start of the school year

The information contained in the written folders of the students was quite cursory and superficial and thus provided little if any help to the classroom teacher. The information obtained from parents was extracted by the teachers. The theme that the teachers used with the parents centered around the major problems the students were presenting to them, how could the teachers help in the attenuation of the problems and what were the expectations of the parents with regard to school programs.

In an attempt to communicate student related information to the reader a form was developed and is presented below. Hopefully, the information contained in the forms provides the reader with a reasonable representation of the functioning level of the students as of August, 1972.

Classroom A

Student #1 :

I. History

A. Sex: Female

B. CA as of September 1972: 10-5

C. IQ: SQ 42 No IQ recorded

D. Level of retardation (AAMD): Severely retarded (moderate-Colony report); Babinski negative flatness of occiput; slightly wide based gait, little speech

E. Medical Diagnosis: Internal strabismus, hand functions grossly normal

F. Psychological descriptives: Vineland Social Quotient-42; short attention span, easily distracted; Peabody PVT-receptive language, age 1-11; Beery Buktenica Visual Motor Integration 2-9 age level; Human Drawing incomplete (unrecognizable); Stanford Binet Intelligence Scale-uncompleted.

G. Placement history

1. Natural home: 7 yrs., 1½ yr.
2. Relative's home:
3. Foster home: Wilson Family Care Home (Lake Mills, Wis.)-1970
4. Private institution:
5. Public institution: Southern Colony-1969
6. Day care center: Kiddie Camp-1966-1968
7. Public school: 1970-71 - trainable class, Koshkonog, Ft. Atkinson, Wis. (Lake Mills, Jefferson County Special Education Program)

   Badger School - Madison January 1972-June 1972

II. Initial maladaptive classroom behaviors

She was extremely "motherly" to other students, e.g., holding their hands, guiding them and reprimanding them.
She would not follow simple directions unless repeated several times.

* Information not included in records

III. The following are concerns communicated to the teacher by the parents:
Her parents were concerned with her speech development.

Classroom A *

Student #2 :

I. History

A. Sex: Female

B. CA as of September 1972: 7-7

C. IQ: not yet 2 yrs.

D. Level of retardation (AAMD): Severely retarded

E. Medical Diagnosis: Poor gross motor coordination, minimal decrease in tone; some skeletal abnormalities, very flat feet, rotation of knee joint possible ("loose").

F. Psychological descriptives: Distractible, no speech, left-handed; Binet-couldn't draw line or circle, scored MA 1-9; not testable on PPVT; Vineland SMS 2-2.

G. Placement history

1. Natural home: 1965-1971
2. Relative's home:
3. Foster home: 1971 on weekends
   1972 - fulltime
4. Private institution:
5. Public institution:
6. Day care center: Kiddie Camp - 1968-1969
7. Public school: September 1971 - Badger

II. Initial maladaptive classroom behaviors

She is easily distracted.
She has no eye contact.
She screams when excited.
There is a smile on her face at all times.
She is almost continually touching or clinging to student seated next to her.

---

* Information not included in records

III. The following are concerns communicated to the teacher by the parents:

Her parents were concerned with her lack of speech which may be due to the formation of the mouth. A partial cleft palate was corrected.

Classroom A

Student #3:

I. History

A. Sex: Male

B. CA as of September 1972: 8-11

C. IQ: 59 (Leiter) 31 (Binet)

D. Level of retardation (AAMD): Mildly retarded (Leiter); Lower range trainable (Binet)

E. Medical Diagnosis: Motor development normal, speech markedly retarded, hyperactive, autistic, nonreactive pupils, no Babinski

F. Psychological descriptives: Leiter-failed at 6 yr. level, passed all of 2 yr. and 3 tests in each of between; Binet-nonverbal, MA 2-8, IQ 31; PPVT (Form A)-raw score 11; imitates syllables; interaction with children aggressive.

G. Placement history

1. Natural home: Since birth.
2. Relative's home:
3. Foster home:
4. Private institution:
5. Public institution:
6. Day care center: Portal Foster
7. Public school: Dudgeon, Madison

II. Initial maladaptive classroom behaviors

He exhibits extreme self-abusive behavior, e.g., bangs head with fist or bangs head against wall or table.
He jumps off the chair and across the room when excited.
He is extremely frightened by animals, by new situations, doctors, nurses, etc. and will run away.
He has echolalic speech.
He is very aggressive with his peers, e.g., hitting, kicking.
When he is told to wait, he cries, bangs his head and/or hits others.
When he cannot complete a puzzle or has trouble in art, he becomes aggressive.

* information not included in records

III. The following are concerns communicated to the teacher by the parents:

He is a very fussy eater.
He has a fear of animals.
He lacks spontaneous speech.

Classroom A

Student #4:

I. History

A. Sex: Male

B. CA as of September 1972: 5-11

C. IQ: Functioned between 2 and 2½ year old level

D. Level of retardation (AAMD): Retarded

E. Medical Diagnosis: Well developed, increased deep tendon reflexes in right lower leg, a left positive Babinski; callus on hand from biting, fingernails infected; hemoglobin count slightly depressed; several carious teeth.

F. Psychological descriptives: Confused, unable to organize perceptions, inappropriate behaviors-excited shaking hands, biting hand, slapping face with back of hand; general good cooperation during testing; gross and fine motor coordination poor.

G. Placement history

1. Natural home: 5 years - since birth

2. Relative's home:

3. Foster home:

4. Private institution:

5. Public institution:

6. Day care center:

7. Public school:

II. Initial maladaptive classroom behaviors

In new situations or when he is very excited he waves his arms and his body shakes.
He cries at inapporpriate times, e.g., when someone else is punished or when they miss an answer.
He bites the back of his hand when excited.

* information not included in records

III. The following are concerns communicated to the teacher by the parents;

His parents were concerned with delayed speech and his hyperactivity.

Classroom A

Student #5:

I. History

A. Sex: Male

B. CA as of September 1972: 8-2

C. IQ: Between 32 and 28

D. Level of retardation (AAMD): Severely retarded

E. Medical Diagnosis: Underdeveloped, poor fine and gross motor coordination; no speech or language; multiple congenital anomalies.

F. Psychological descriptives: Binet-11 months, Vineland-64; unresponsive to environment; eye contact fleeting; very manipulative

G. Placement history

1. Natural home: Since birth.
2. Relative's home:
3. Foster home:
4. Private institution:
5. Public institution:
6. Day care center: Kiddie Camp - 1969-1972
7. Public school:

II. Initial maladaptive classroom behaviors

He pulls his pants (trousers and underpants) down in class.

He pushes chair away from table while working.
While urinating, he will get urine on hands and lick hands.
He smears and attempts to eat feces.
He spills milk (up to 10 times in one meal).
He waves his fingers in front of eyes.
He eats paste and paints.
He spills items in containers, i.e., paint.
He throws toys or instructional objects.

* information not included in records

He pulls his peers hair.
He spits at and hits his peers.
He does not comply with his teacher's directions, i.e., stand up or sit down.
He will urinate in his pants, although he is toilet trained.

III. The following are concerns communicated to the teacher ~~by~~ the parents:

His parents are concerned with his non-compliance and the extent to which he will go to get adult attention.
They are also concerned with his lack of speech and eating behaviors, i.e., spilling milk.
He is hurting his younger brother at home.
They are concerned with his apparent awareness but their inability to get him under control.

Classroom A

Student #6:

I. History

A. Sex: Male

B. CA as of September 1972: 8-8

C. IQ: Not on norm.

D. Level of retardation (AAMD): Severely-profoundly retarded

E. Medical Diagnosis: Husky, undersized; one eye crossed; defective eardrum on left ear; sexually underdeveloped - overweight.

F. Psychological descriptives: Not yet at babbling stage, able to imitate a few sounds; Binet - passed only two of four non-verbal tasks at 2 yr. level; no behavior problem.

G. Placement history

1. Natural home: Since birth.
2. Relative's home:
3. Foster home:
4. Private institution:
5. Public institution:
6. Day care center: Kiddie Camp
7. Public school:

II. Initial maladaptive classroom behaviors

He is not toilet trained.
He has virtually no self-help skills, e.g., could not get pants down or up.
His in seat behavior and eye contact poor.

* information not included in records

III. The following are concerns communicated to the teacher by the parents:

His parents were concerned with his speech and lack of toilet training.

Classroom A

Student #7 :

I. History

A. Sex: Male

B. CA as of September 1972: 5-11

C. IQ:

D. Level of retardation (AAMD): Functionally delayed, autistic.

E. Medical Diagnosis: Blind, frequent drainage from eyes, poor muscle tone. No eyes - doesn't wear artificial eyes.

F. Psychological descriptives: Self-abusive, bites staff, temper tantrums, screams and cries; fearful of new situations.

G. Placement history

1. Natural home:
2. Relative's home:
3. Foster home· 2 in past year 3 months and 2 months
4. Private institution:
5. Public institution: Central Colony
6. Day care center: Kiddie Camp
7. Public school: Glen Stephens, Lapham

II. Initial maladaptive classroom behaviors

His temper tantrums consist of screaming, hitting, biting and scratching.
He is not toilet trained and has no control over bowel movements.
He ruminates food.
He is completely immobile by himself.
When he is frustrated he bites the teacher.
He tries to sleep all day.
He eats his food too fast, e.g., he holds it in his mouth and then spits it out.
He pokes his fingers into the empty eye sockets.
He is self abusive, e.g., bites himself, hits head with hands.

* information not included in records

III. The following are concerns communicated to the teacher by the parents:

In the first meeting his mother was uncooperative, she accepted all behaviors as the way things had to be.

At a later meeting her concerns were his sleeping habits, e.g., arises at 4 or 5 in the morning; spitting his food.

She is overprotective - afraid he will hurt himself if he is allowed to be independent; his bowel movements could be medical problem.

She is very afraid of pneumonia.

Classroom B

Student #8:

I. History

A. Sex: Male

B. CA as of September 1972: 5-5

C. IQ: A psychologist described S8 as "not testable" "...impossible to obtain any formal test scores".

D. Level of retardation (AAMD): "It is apparent...is functioning at a severely retarded level."

E. Medical Diagnosis: Not provided.

F. Psychological descriptives: "highly distractible", "punishment is ineffective", "no eye contact"

G. Placement history

1. Natural home: *

2. Relative's home: *

3. Foster home: S8 is currently residing in a foster home but the length of time was not provided.

4. Private institution: *

5. Public institution: *

6. Day care center: Attended a local association for retarded children sponsored by care center (Kiddie Camp) prior to public school.

7. Public school: Badger School (8/28/72 to present.

II. Initial maladaptive classroom behaviors

A. Seat behavior
- He would intentionally fall out of chair
- He would not sit to cue: "Sit down" consistently
- He would not remain seated for more than 5-15 min. periods
- He would completely turn around in a chair

B. Eye contact
- To the cue: "‸ S8 look" he would not look at teacher
- To the cues: ", S8 look" and T pointing to an object on table, he would not look at object.

* information not included in records

C. Vomiting occurred in the following situations:
   - When no adult was near him he would vomit. If I wiped up vomit, he would vomit again.
   - He would vomit if put in time out room.
   - When it was demanded he stand up, he would vomit.

D. In a group situation, when he was presented with a toy at a table, he would throw it off the table.

E. He would put most objects presented to him in his mouth.

F. Little orientation of self in environment (i.e., he would sit down and miss chair).

G. He would fall down during play and refuse to stand up to cue: "Stand up"

H. He would not follow any verbal directions consistently

I. When sitting he would remove shoes.
   During the first week of school he had more wet pants than dry ones.

J. He was not toilet trained.

III. The following are concerns communicated to the teacher by the parents :

   A. Parents were worried about so many head injuries.

   B. Parents were aware of lack of orientation in environment.

   C. Gross motor development; they were concerned about posture (slumping in chair and walking) - knees turned inward.

   D. Parents wondered if speech would ever develop.

Classroom B

Student #9 :

I. History

A. Sex: Female

B. CA as of September 1972: 7-11

C. IQ: 48

D. Level of retardation (AAMD): Moderate

E. Medical Diagnosis: Brain injured

F. Psychological descriptives: Hyperactive, inability to attend to a task, quite determined and somewhat spoiled.

G. Placement history

1. Natural home: 7-11
2. Relative's home:
3. Foster home:
4. Private institution:
5. Public institution:
6. Day care center: Kiddie Camp - years not given.
7. Public school: Badger School (8/30/71 to present)
   Private School: Montessori School - years not given.

II. Initial maladaptive classroom behaviors

Her seat behavior, constant twisting and turning in seat and touching other students in the group.
When she was asked to follow directions she did not want to do, she would shriek out "no!" and start whining.
When it was time for her turn in a small group, she would often stare into space and her attention could not be regained by calling her name or giving the cue with respect to the task at hand.

* information not included in records

III. The following are concerns communicated to the teacher by the parents:

They were concerned with her eating habits, e.g., eating with hands and not swallowing food.
They were concerned over her "no" behavior to many requests.

Classroom B

Student #10

I. History

A. Sex: Female

B. CA as of September 1972: 6-9

C. IQ: *

D. Level of retardation (AAMD): *

E. Medical Diagnosis: *

F. Psychological descriptives: *

G. Placement history

1. Natural home: 5 years
2. Relative's home:
3. Foster home: 1-9
4. Private institution:
5. Public institution:
6. Day care center:
7. Public school: Longfellow (pre-primary project) 1-5
   Badger School (2/12/73 to present)

II. Initial maladaptive classroom behaviors

She would not remain seated for more than 5-10 minutes without twisting, turning, and whining.
There were continuous irrelevant utterances with respect to task at hand.
When given a direction she did not want to do, she would refuse to move and start crying.
She continuously scolded herself, e.g., " $\underline{S}_{10}$ bad girl", " $\underline{S}_{10}$, stop whining", etc..
In a program whe she was not reinforced with an edible because of giving an incorrect response, whe would cry.
When asked to perform a new task she would refuse and start to cry fearfully.

* Information not included in records

III. The following are concerns communicated to the teacher by the parents :

Her natural mother says $\underline{S}_{10}$ is a fussy eater to the point of refusing all food with her (not true in foster home). She is concerned about crying and whining.

Her foster parents felt her needs were not being met in the previous program.

Classroom B

Student#11:

I. History

A. Sex: Female

B. CA as of September 1972: 7-10

C. IQ: 32

D. Level of retardation (AAMD): Severe

E. Medical Diagnosis: Down's Syndrome, congenital heart disease

F. Psychological descriptives: Withdraws when being reprimanded, somewhat distractible, persistent and determined to get her way.

G. Placement history

1. Natural home: 3-6
2. Relative's home:
3. Foster home: 1 year
4. Private institution:
5. Public institution: Central Colony 3-4
6. Day care center:
7. Public school: Badger School (8/28/72 to present)

II. Initial maladaptive classroom behaviors

Echoic speech, in academics she would repeat cues.
When given a cue in programs, i.e. "Touch ___", she would echo cue and not respond in any manner.
At the start of a new activity she would continue talking only about the task just completed.

* information not included in records

III. The following are concerns communicated to the teacher by the parents;

Her foster parents were concerned that at home she would throw objects in the wastebasket, i.e., wallets, letters.
They were concerned that she was stubborn (refusal to follow directions).
They feel that she eats too slow (not appropriate complaint-she takes 20-30 min./meal in school).

III. The following are concerns communicated to the teacher by the parents:

Her parents were concerned that she would not go to the bathroom on a black toilet seat or toilets away from home.
She is a fussy eater.
She refused to follow directions given at home.
She is too slow on completing tasks when directions are followed.

Classroom B

Student #12:

I. History

A. Sex: Female

B. CA as of September 1972: 5-6

C. IQ: "at least 50"

D. Level of retardation (AAMD): Moderate

E. Medical Diagnosis: Brain damage, "looks like a child with minor cerebral palsy or a rubella child"; petite mal seizure, eye problems - rheumatoid arthritis

F. Psychological descriptives: Poor motor coordination, lethargic, uncooperative, passive refusal, negativism, short attention span.

G. Placement history

1. Natural home: 5-6 yrs.
2. Relative's home:
3. Foster home:
4. Private institution:
5. Public institution:
6. Day care center: Kiddie Camp - 2 years
7. Public school: Badger School (8/28/72 to present)
   Private school: Montessori - 1 year

II. Initial maladaptive classroom behaviors

She would not approach or sit on a toilet in school.
She would not follow any directions consistently, e.g., moving to different areas of room.
She refused to match, touch or give any verbal responses in academic programs.
She was slow in responding, e.g., length of time between cue and response.
She displayed a tenseness in work situations of clutching fists and not moving arms.
In a task that demanded a verbal response, she would often answer: "I don't know", with an activity demanding a motor response she would often start crying: "I can't do it".
She displayed no verbal or physical interaction with her peers.

☆ information not included in records

Classroom B

Student #13:

I. History

A. Sex: Male

B. CA as of September 1972: 7-4

C. IQ: 38

D. Level of retardation (AAMD): Severe

E. Medical Diagnosis: Down's Syndrome, "serious heart murmur"

F. Psychological descriptives: Unresponsive youngster, soft hypatonic, lack of cooperation, trys to get out of working by pouting (putting head down, dull, unhappy expression), most words are delivered in a whisper.

G. Placement history

1. Natural home: 7-4
2. Relative's home:
3. Foster home:
4. Private institution:
5. Public institution:
6. Day care center: Kiddie Camp - years not given
7. Public school: Badger School (8/30/71 to present)

II. Initial maladaptive classroom behaviors

S13 has very low voice volume and if requested to speak louder, he would speak softer.
He would give no responses (motor or verbal) to cues in academic programs.
He would often fail to imitate motor movements of model.
When he did not want to respond he would drop his face to his chest.
There was no imitation to the cue: "Say ____".

---

* information not included in records

III. The following are concerns communicated to the teacher by the parents;

His parents were concerned over his fussy eating habits, over his fear of loud noises (i.e., sirens, loud music, etc.) and his fear of new environments (i.e., crys and gags).

Classroom B

Student #14:

I. History

A. Sex: Male

B. CA as of September 1972: 5-7

C. IQ: MA 2-0

D. Level of retardation (AAMD): Profoundly

E. Medical Diagnosis: Down's Syndrome, slight heart murmur

F. Psychological descriptives: Pouting behaviors, failure to come when called, requires extensive treatment procedures.

G. Placement history

1. Natural home: *
2. Relative's home: *
3. Foster home: 1-6
4. Private institution: *
5. Public institution: Central Colony 1-8
6. Day care center: Kiddie Camp 1
7. Public school: Badger School (8/28/72 to present)

II. Initial maladaptive classroom behaviors

He would not move from one area to another with just a verbal direction unless the teacher motioned to him where to go.
He would have wet pants two to four times a week.
He screamed when attention wasn't given the moment he demanded it (e.g., pulling the teacher or saying "mama").

* Information not included in records

III. The following are concerns communicated to the teacher by the parents:

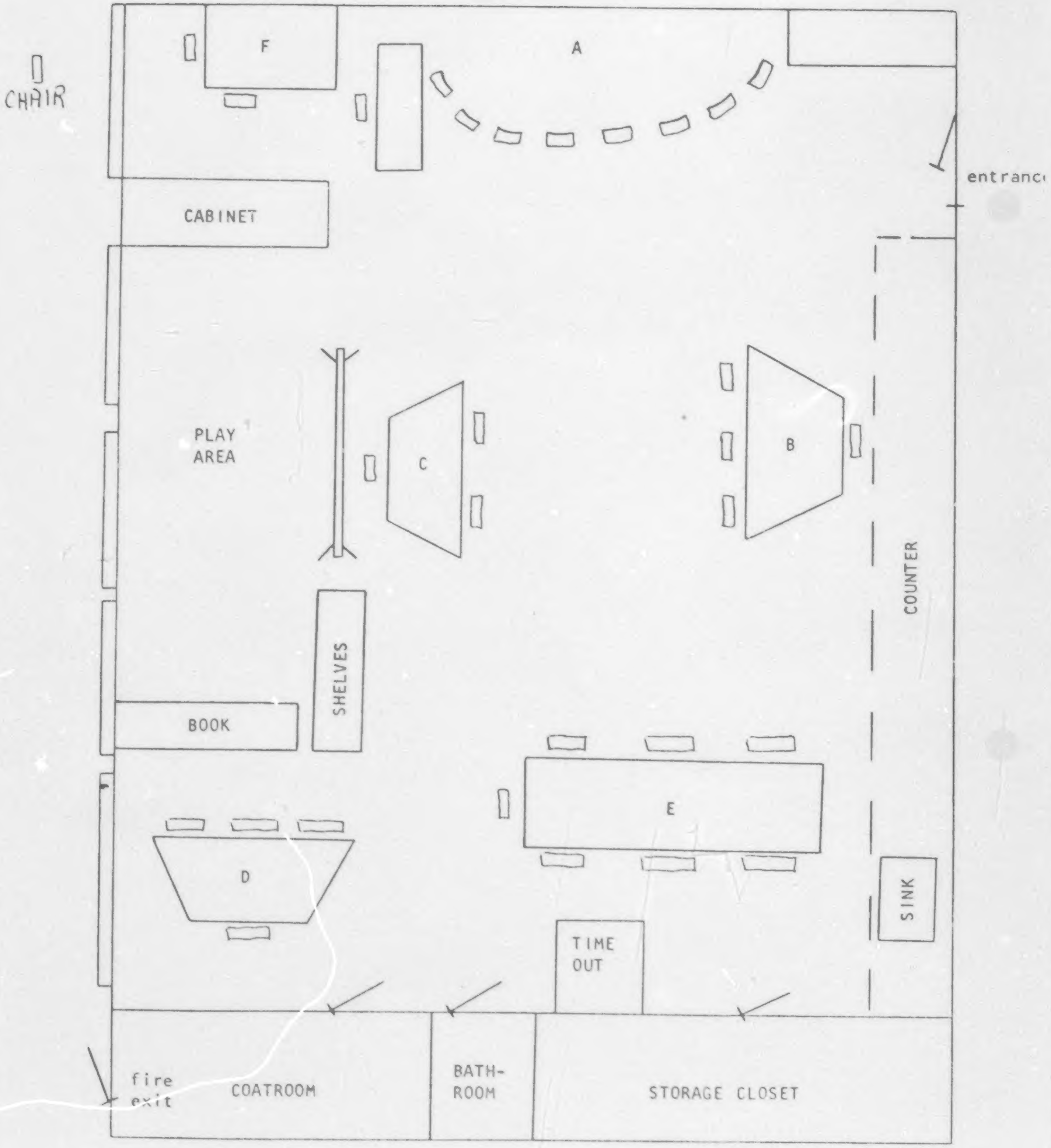
His parents were concerned that he was eating too fast and that he has a weight problem.

Appendix B

Class Schedules and Room Arrangements

Appendix B contains information related to the manner in which classrooms A and B were engineered as well as the daily schedule through which the students progressed. Perhaps two points should be stressed: first, the schedules and arrangements should communicate to the reader the relatively precise organization of the program; secondly, it should be noted that the scheduled class activities changed from time to time depending upon the performance of the students (See Class B, August and May).

ROOM DESIGN
CLASS A


CHAIR
F
A
entranc
CABINET
PLAY AREA
C
B
COUNTER
SHELVES
BOOK
E
D
SINK
TIME OUT
fire exit
COATROOM
BATH-ROOM
STORAGE CLOSET

Room Design

Class A

Activity Areas: A Opening, Direction Following, Large Group Activities

B
C Small Group Instruction (academic programs)
D

E Milk Break, Lunch, Large Group Activities, Art

F Instruction for S_7 - Blind Student

Class A Schedule

August 1972

8:15-8:30	Arrival, hang coats up, bathroom, free play	
8:30-8:50	Opening	
8:50-9:10	Group 1 Handwriting	Group 2 Speech Object Discrimination
9:10-9:30	Group 1 Speech Object Discrimination	Group 2 Handwriting
9:30-9:45	Milk Break	
9:45-10:00	Recess	
10:00-10:15	Bathroom	
10:15-10:35	Group 1 Colors	Group 2 Shapes
10:35-10:55	Group 1 Shapes	Group 2 Colors
10:55-11:20	Direction Following - whole class	
11:20-11:35	Activity Period - art, gross-motor, stories	
11:35-11:45	Bathroom	
11:45-1:00	Lunch	
1:00-1:10	Bathroom	
1:10-1:30	Rest	
1:30-1:50	Zipping	
1:50-2:10	Group 1 Animals	Group 2 Numerals
2:10-2:30	Group 1 Numerals	Group 2 Animals
2:30-2:45	Bathroom Coats	

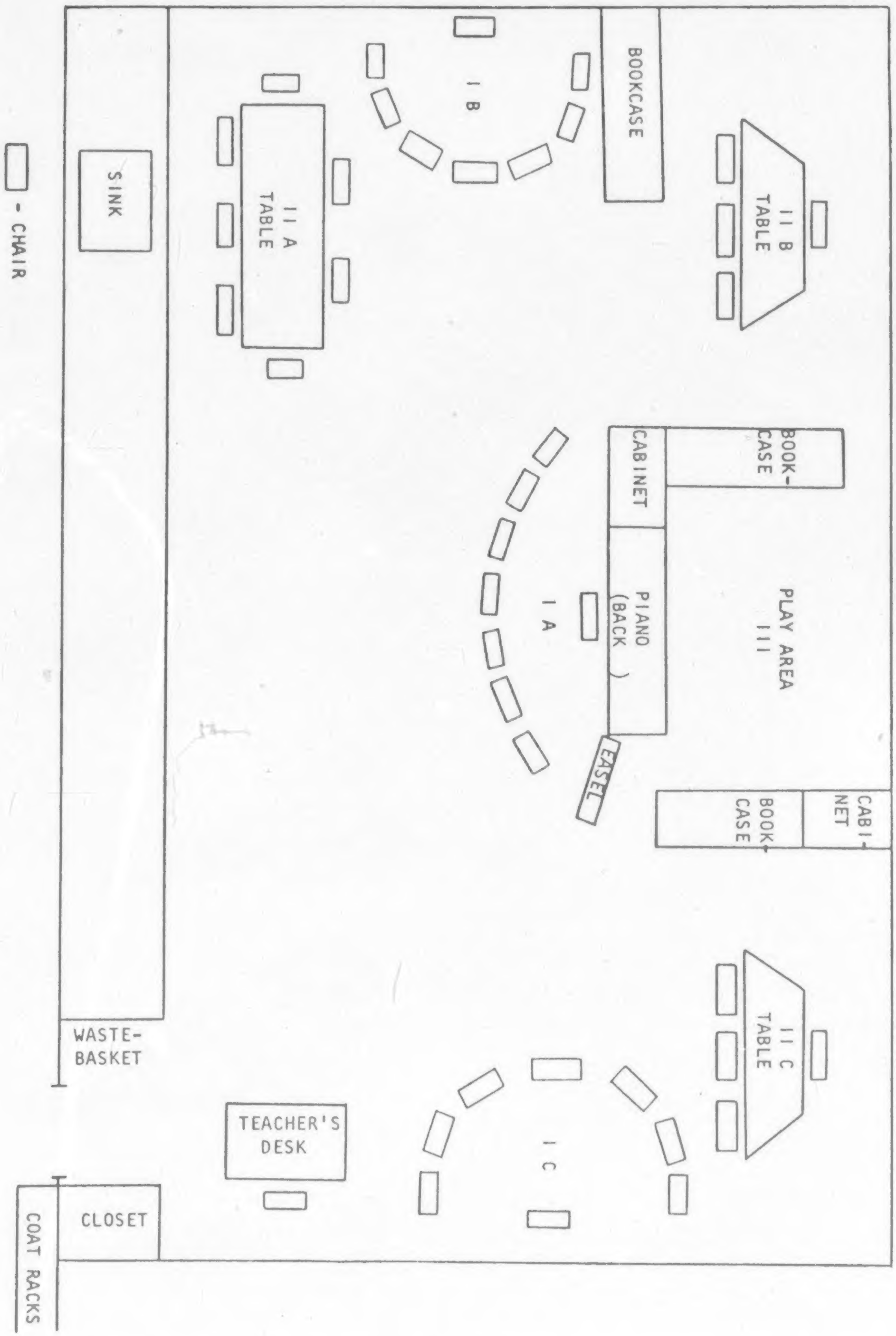
Class A Schedule

May 1973

8:15-8:30	Arrival, hang coats up, bathroom, brush teeth, free play		
8:30-9:00	Opening		
9:00-9:10	Group 1 Handwriting	Group 2 Handwriting	Group 3 Handwriting
9:10-9:20	Group 1 Sight Words Identification of Pictures of Peers	Group 2 Picture Discrimination	Group 3 Picture Discrimination
9:20-9:30	Group 1 Rote Counting	Group 2 Speech	Group 3 Speech
9:30-9:45	Milk Break		
9:45-10:10	Recess		
10:10-10:20	Bathroom		
10:20-10:30	Storytime		
10:30-10:45	Group 1 Directions	Group 2 Days of Week	
10:45-11:00	Group 1 Big-Little	Group 2 Shapes	
11:00-11:10	Group 1 Shapes	Group 2 Big-Little	Group 3 Prepositions
11:10-11:20	Group 1 Colors	Group 2 Colors	Group 3 Color Sight Words
11:20-11:45	Activity Period		
11:45-11:55	Bathroom		
11:55-1:00	Lunch		
1:00-1:15	Rest		
1:15-1:30	Group 1 Zipping	Group 2 Tying Knots	Group 3 Bowtying
1:30-1:45	Group 1 Alphabet	Group 2 One-Many	

1:45-2:00	Group 1 One-Many	Group 2 Animals
2:00-2 15	Group 1 Animals	Group 2 Numerals
2:15-2:30	Group 1 Numerals	Group 2 Activity, coloring, gross-motor, etc.
2:30-2:45	Bathroom Coats Departure	

ROOM DESIGN
CLASS B


- CHAIR
SINK
II A TABLE
I B
BOOKCASE
II B TABLE
CABINET
BOOK-CASE
PIANO (BACK)
I A
PLAY AREA III
EASEL
BOOK-CASE
CABI-NET
WASTE-BASKET
II C TABLE
TEACHER'S DESK
I C
CLOSET
COAT RACKS

ROOM DESIGN
CLASS B

Area in Room	Activity
IA	Opening
IB	Spatial Positions Whole Group Counting
IC	Two-Component Directions Whole Group
IIA	Small Group Whole Group Milk and Cookies Lunch
IIB	Small Group
IIC	Small Group
III	Free time area for reinforcement

OR

Activity	Area
Opening	IA
Whole Group	IA-B-C, IIA
Spatial Positions	IB
Counting	IB
Two-Component Directions	IC
Small Group	IIA-B-C
Milk and Cookies	IIA
Lunch	IIA
Free time area	III

DAILY SCHEDULE - CLASSROOM B

AUGUST 1972

Morning

8:15-8:30	Arrival - Taking off outer garments - Hanging up coat		
8:30-8:45	Bathroom		
8:45-9:10	Opening - Attendance - Time concepts weekdays months - Weather		
9:10-9:30	Local Directions		
9:30-9:45	Milk and Cookies		
9:45-10:00	Recess		
10:00-10:15	Bathroom		
10:15-10:45	Small Groups		
	Group 1 - Shapes - Colors	Group 2 - Shapes - Colors	Group 3 - Shapes - Colors
10:45-11:15	Spatial Positions		
11:15-11:35	Group Activity - Music - Stories - Art, etc.		
11:35-11:50	Bathroom		
11:50-12:30	Lunch in cafeteria		
12:30-1:00	Recess		
1:00-1:15	Bathroom		
1:15-1:45	Sing Songs Rest Time		
1:45-2:00	Counting		
2:00-2:30	Group Activity - Science - Animals - Coloring, etc.		
2:30-2:45	Bathroom		
2:45	Send to Busroom		

DAILY SCHEDULE - CLASSROOM B

MAY 1973

Morning

8:15-8:30 Arrival
- Taking off outer garments
- Hanging up coat
- Brushing teeth

8:30-8:40 Bathroom

8:40-9:00 Opening - Whole Group
- Attendance
- Time concepts
    - clock
    - calendar
    - weekdays
    - months
    - daily activities
- Weather

9:00-9:30 Small Groups

Group 1	Group 2	Group 3
- One and Many	- One and Many	- One and Many
- Animals	- Animals	- Chart Story
- Left to right eye movement	- Handwriting	- Handwriting
- Gross motor development		

9:30-9:45 Milk and Cookies

9:45-10:00 Recess

10:00-10:15 Bathroom

10:15-10:45 Small Groups

Group 1	Group 2	Group 3
- Big/Little	- Long/Short	- In, On, Under
- Shapes	- Straight/Curved	- Top/Bottom
- Colors	- Rational Counting	- Rational Countin
- Objects	- Colors	- Colors
- Name Recognition	- Alphabet	- Alphabet
	- Sight Words	- Sight Words

10:45-11:00 Spatial Positions (6 students)
Attending Program (1 student)

11:00-11:15 Two Component Directions (Whole Group)

11:15-11:20 Left/Right (Whole Group)

11:20-11:30	Zipping Buttoning Tying
11:30-11:45	Group Activity - Stories - Art activities - Music activities, etc.
11:45-12:00	Bathroom

Afternoon

12:00-12:30	Lunch in room with teacher
12:30-1:00	Recess
1:00-1:15	Bathroom
1:15-1:30	Rest Time Individual Work
1:30-1:45	Counting Number Recognition

Monday	1:45	Early Releasal
Tuesday	1:45-2:00	Fruits Vegetables
	2:00-2:15	Science activity (Whole Group)
	2:15-2:30	Paperwork
Wednesday and Friday	1:45-2:15	Gym (Phy. Ed. Instructor)
	2:15-2:30	Fruits Vegetables
Thursday	1:30-2:10	Art (Art Instructor)
	2:10-2:20	Counting Number Recognition
	2:20-2:30	Paperwork

2:30-2:45	Bathroom
2:45	Send to busrooms

Appendix C

Parent Teacher Evaluation Booklets

Appendix C includes copies of parent-teacher evaluation booklets. These booklets were used to communicate to parents the specific tasks their children were being taught when the parents met with the teachers at conferences. After the parents had become familiar with the organization and content, the booklets were brought home to the parents by the students or mailed to the home in an attempt to keep each parent continually appraised of the instructional programs in which their children were involved.

It should be noted that many of the programs to which the students were exposed during the year not presented in detail in the body of this report are presented in outline form in the booklets. It is assumed that the reader can readily adapt the procedures presented in the body of the report to the tasks in the booklets.

CLASSROOM A
EVALUATION REPORT

1972-1973

FINAL REPORT

STUDENT ______________________

TEACHER ______________________

AIDE ______________________

EVALUATION SHEET

STUDENT ____________

AREA: DIRECTION FOLLOWING
The student will appropriately respond to a verbal direction given by the teacher.

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. One-component local			
1. Shake head			
2. Stamp feet			
3. Stand up			
4. Clap hands			
5. Raise hands			
II. One-component distant			
1. Go to door			
2. Go to wastebasket			
3. Go to boxes			
4. Go to sink			
5. Go to coatroom			
III. Two-component local (serial directions)			
SET ONE			
1. Clap hands, then stand up			
2. Stamp feet, then shake head			
3. Stand up, then raise hands			
4. Shake head, then clap hands			
5. Raise hands, then stamp feet			
SET TWO			
1. Clap hands, then raise hands			
2. Raise hands, then shake head			
3. Stamp feet, then clap hands			
4. Stand up, then stamp feet			
5. Shake head, then stand up			

EVALUATION SHEET STUDENT ____________

AREA: COLORS RED (R), GREEN (G), BLUE (B), YELLOW (Y)
* The underlined color is the stimulus presented by the teacher and the correct response by the student.

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. MATCHING Touch with visual and verbal cue Set I RG, RG, BY, BY Set II GB, GB, RY, RY Set III GY, GY, RB, RB Set IV RGY, RYB, RBG, GBY Set V RGY, RYB, RBG, GBY Set VI RGY, RYB, RBG, GBY Set VII RGYB, RGYB, RGYB, RGYB			
II. NON-VERBAL IDENTIFICATION Touch with verbal cue only Set I RG, RG, BY, BY Set II GB, GB, RY, RY Set III GY, GY, RB, RB Set IV RGY, RYB, RBG, GBY Set V RGY, RYB, RBG, GBY Set VI RGY, RYB, RBG, GBY Set VII RGYB, RGYB, RGYB, RGYB			
III. LABELING Teacher cue: "What color is this?" Student response: Red, green, yellow or blue			

EVALUATION SHEET

STUDENT ____________________

AREA: COLOR SIGHT WORDS
RED, GREEN, YELLOW, BLUE

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. Reads the sight words "green," "blue", "red", "yellow" - with visual cue of colored paper above sight word.			
II. Reads the sight words "green", "blue", "red", "yellow"			
III. Reads the sight words "green", "blue", "red", "yellow" - and points to the appropriate colored paper.			

EVALUATION SHEET STUDENT ____________________

AREA: SHAPE DISCRIMINATION TRIANGLE (△), CIRCLE (○), SQUARE (□)
* The shaded shape is the stimulus presented by the teacher and the correct response by the student.

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. MATCHING 3-DIMENSIONAL Touch with visual and verbal cue Set I ●△, ○▲, ●□, ○■, ▲□, △■ Set II ●△□, ○▲□, ○△■			
II. NON-VERBAL IDENTIFICATION 3-DIMENSIONAL Touch with verbal cue only Set I ●△, ○▲, ●□, ○■, ▲□, △■ Modifications A. ●□, ○■ B. ▲□, △■ C. ●△, ○▲ Set II ●△□, ○▲□, ○△■			
III. LABELING 3-DIMENSIONAL Teacher cue: "What shape is this?" Student response: Square, circle or triangle			
IV. LABELING 2-DIMENSIONAL Teacher cue: "What shape is this?" Student response: Square, circle or triangle			

EVALUATION SHEET STUDENT ____________________

AREA: BIG/LITTLE IDENTIFICATION OF SIZE RELATIONSHIPS

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. NON-VERBAL IDENTIFICATION 3-DIMENSIONAL Touch with verbal cue only Cue: "Touch big" or "Touch little" Big Ball - Little Ball Big Plate - Little Plate Big Candy Bar - Little Candy Bar			
II. NON-VERBAL IDENTIFICATION 2-DIMENSIONAL Touch with verbal cue only Cue: "Touch big" or "Touch little" Big Diamond - Little Diamond Big Octagon - Little Octagon Big Abstract - Little Abstract			
III. LABELING 3-DIMENSIONAL Cue: "Is this big or little?" Big and Little Ball Big and Little Plate Big and Little Candy Bar			
IV. LABELING 2-DIMENSIONAL Cue: "Is this big or little?" Big and Little Diamond Big and Little Octagon Big and Little Abstract			

EVALUATION SHEET STUDENT ____________________

AREA: RECEPTIVE LANGUAGE
OBJECT DISCRIMINATION
Three objects are placed in front of the student; the teacher cue is:
"Touch __(ball)__."

TASK		TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
Set I	doll book truck			
Set II	spoon cup napkin			
Set III	crayon pencil paper			
Set IV	puzzle bean bag block			
Set V	toothbrush soap paper towel			
Set VI	box scissors chalk			

EVALUATION SHEET   STUDENT ________________

AREA: RECEPTIVE LANGUAGE
PICTURE DISCRIMINATION
Three pictures are placed in front of the student; the teacher cue is: "Touch __(ball)__."

TASK		TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
Set VII	doll book truck			
Set VIII	spoon cup napkin			
Set IX	crayon pencil paper			
Set X	scissors toothbrush safety pin			
Set XI	tree car kite			
Set XII	bathtub telephone flag			
Set XIII	barn bed fence			

EVALUATION SHEET

STUDENT ____________________

AREA: LANGUAGE AND SPEECH DEVELOPMENT

I. TASKS COMPLETED IN LANGUAGE PROGRAM

II. SOUNDS, WORDS, OR PHRASES COMMONLY USED IN SCHOOL

III. TEACHER COMMENTS AND SUGGESTIONS

EVALUATION SHEET

STUDENT ____________________

AREA: NUMERALS 1,2,3,4,5
The numerals are placed in serial order on a piece of tagboard. Numerals are on flashcards for the visual cue of the matching phase.

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. MATCHING Touch with visual and verbal cue Set I 1,2 Set II 1,2,3 Set III 1,2,3,4 Set IV 1,2,3,4,5			
II. NON-VERBAL IDENTIFICATION Touch with verbal cue only Set I 1,2 Set II 1,2,3 Set III 1,2,3,4 Set IV 1,2,3,4,5			
III. LABELING 1,2,3,4,5 Cue: "What number is this?" Presented in serial order			
IV. LABELING 1,2,3,4,5 Cue: "What number is this?" Presented out of order			
V. LABELING 1,2,3,4,5 Cue: "What number is this?" Presented out of order on flashcards			

EVALUATION SHEET

STUDENT ____________________

AREA: ROTE COUNTING
Verbal cue given by teacher, and student verbally counts through specified number.

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. Count through one			
II. Count through two			
III. Count through three			
IV. Count through four			
V. Count through five			
VI. Count through 1 Count through 2 Count through 3 Count through 4 Count through 5 } given in any order			

EVALUATION SHEET STUDENT ____________

AREA: MATH ONE/MANY
Student touches one object or many oojects upon verbal cue: "Touch One" or "Touch Many"

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. NON-VERBAL IDENTIFICATION 3-DIMENSIONAL Touch with verbal cue only One Pencil - Many Pencils One Gum - Many Gums One Flag - Many Flags			
II. NON-VEPBAL IDENTIFICATION 2-DIMENSIONAL Touch with verbal cue only One House - Many Houses One Tree - Many Trees One Circle - Many Circles			
III. LABELING 3-DIMENSIONAL Cue: "How many ______?" One Pencil - Many Pencils One Gum - Many Gums One Flag - Many Flags			
IV. LABELING 2-DIMENSIONAL Cue: "How many ______?" One House - Many Houses One Tree - Many Trees One Circle - Many Circles			

EVALUATION SHEET

STUDENT ____________

AREA: READING SIGHT WORDS

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. LABELS OBJECTS ball, milk, book			
II. LABELS PICTURES ball, milk, book			
III. Reads sight words - "ball", "milk", "book" with visual cue of picture above sight word.			
IV. Reads sight words - "ball", "milk", "book".			
V. Reads sight words - "ball", "milk", "book" and points to appropriate picture.			
I. Labels Pictures fish, bird, house			
II. Reads sight words - "fish", "bird", "house" with visual cue of picture above sight word.			
III. Reads sight words - "fish", "bird", "house".			
IV. Reads sight words - "fish", "bird", "house" and points to appropriate picture.			

EVALUATION SHEET STUDENT ____________

AREA: ALPHABET
CAPITAL LETTERS WERE USED

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. MATCHING Touch with visual and verbal cue			
Set I A,B,C			
Set II D,E,F			
Set III G,H,I			
Set IV J,K,L			
Set V M,N,O			
Set VI P,Q,R			
Set VII S,T,U			
Set VIII V,W,X			
Set IX Y,Z			
II. NON-VERBAL IDENTIFICATION Touch with verbal cue only			
Set I A,B,C			
Set II D,E,F			
Set III G,H,I			
Set IV J,K,L			
Set V M,N,O			
Set VI P,Q,R			
Set VII S,T,U			
Set VIII V,W,X			
Set IX Y,Z			

EVALUATION SHEET

STUDENT ____________

AREA: ALPHABET

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
III. LABELING Cue: "What letter is this?"			
Set I A,B,C			
Set II D,E,F			
Set III G,H,I			
Set IV J,K,L			
Set V M,N,O			
Set VI P,Q,R			
Set VII S,T,U			
Set VIII V,W,X			
Set IX Y,Z			

EVALUATION SHEET STUDENT ____________

AREA: PREPOSITIONS IN, ON, UNDER

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. Puts block in appropriate position in relation to a box when given verbal cue: "Put block (in) box". (on) (under)			
II. Labels appropriately where the block is in relation to the box. Cue: "Where is the block?" Response: "In" "On" "Under"			

EVALUATION SHEET

STUDENT ____________________

AREA: ANIMALS

IDENTIFICATION OF PICTURES OF ANIMALS

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. NON-VERBAL IDENTIFICATION Touch with verbal cue only Set I pig, duck, sheep, chicken			
Set II cow, dog, horse, kitty			
Set III giraffe, elephant, tiger, monkey			
Set IV lion, turtle, zebra, bear			
II. Labeling Cue: "What is this?" Set I pig, duck, sheep, chicken			
Set II cow, dog, horse, kitty			
Set III giraffe, elephant, tiger, monkey			
Set IV lion, turtle, zebra, bear			

EVALUATION SHEET

STUDENT ____________________

AREA: DAYS OF WEEK
Recognition of written word for days
Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. MATCHING Touch with visual and verbal cue Days were presented in pairs. Each day of the week was presented with each of the other six days.			
A. MONDAY			
B. TUESDAY			
C. WEDNESDAY			
D. THURSDAY			
E. FRIDAY			
F. SATURDAY			
G. SUNDAY			
II. NON-VERBAL IDENTIFICATION Touch with verbal cue only Days were presented in the same fashion, in pairs.			
A. MONDAY			
B. TUESDAY			
C. WEDNESDAY			
D. THURSDAY			
E. FRIDAY			
F. SATURDAY			
G. SUNDAY			

EVALUATION SHEET

STUDENT ____________________

AREA: HANDWRITING PRINTING

A piece of primary writing paper with a printed stimulus on it is given to the student. The student is to copy the stimulus. If the student fails, the teacher models the writing procedure and if needed, the teacher primes the student through the writing.

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. PRINTING COMPONENTS IN ISOLATION | — \\ / O U ∩			
II. LETTERS PRINTED			
III. WORDS PRINTED			

EVALUATION SHEET

STUDENT ____________

AREA: ZIPPING
For the teaching of zipping, a zipping frame (12" square) was used. Then transfer was made to their own coat.

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. Upon teacher demonstration of the task and verbal cue: "Do this"; the student holds left side of cloth with left hand.			
II. Upon teacher demonstration of the task and verbal cue: "Do this"; the student holds left side of cloth with left hand and holds zipper lock with right hand.			
III. Upon teacher demonstration of the task and verbal cue: "Do this"; the student has hands placed as above and attaches zipper lock to zipper track.			
IV. Upon teacher demonstration of the task and verbal cue: "Do this, zip", the student attaches zipper lock to zipper track and zips up the entire zipper.			
V. Upon teacher cue: "Zip" the student attaches zipper lock to zipper track and zips up the entire zipper.			
** The student zips his own coat with no help.			

EVALUATION SHEET

STUDENT ____________________

REINFORCEMENT

SOCIAL BEHAVIOR

ATTENDING SKILLS

SELF-HELP SKILLS

EATING ____________________

TOILETING ____________________

BRUSHING TEETH ____________________

PUTTING COAT ON
ZIPPING ____________________

TYING KNOTS ____________________

TYING BOWS ____________________

PAPER WORK

EVALUATION SHEET

STUDENT ____________

OPENING EXERCISES

GOOD MORNING ____________________

NAME RECOGNITION ____________________

MONTHS, DAYS, CALENDARS ____________________

____

WEATHER ____________________

____

____

MOTOR SKILLS

GROSS MOTOR ____________________

____

____

____

FINE MOTOR

PASTING ____________________

CUTTING ____________________

COLORING ____________________

PAINTING ____________________

EYE MOVEMENT

LEFT TO RIGHT ORIENTATION ____________________

____

____

____

____

____

EVALUATION SHEET STUDENT ____________________

GENERAL COMMENTS

CLASSROOM B
1972-1973 SCHOOL EVALUATION
JUNE 1973

STUDENT ____________________

TEACHER ____________________

AIDE ____________________

EVALUATION STUDENT ____________

AREA: CHART STORY

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. Ball The red ball. The ball is red. Jump, jump, jump. A. Sight words in isolation ball red jump B. Able to read complete chart story all at once.			
II. Balloon The green balloon. The balloon is green. Jump, jump, jump. A. Sight words in isolation balloon green jump B. Able to read complete chart story all at once.			
III. Fish The orange fish. The fish is orange. Swim, swim, swim. A. Sight words in isolation fish orange swim B. Able to read complete chart story all at once.			
IV. Ball and Balloon The ball is green. The balloon is red. Jump ball. Jump balloon. A. Sight words in isolation ball balloon red green jump B. Able to read complete chart story all at once.			

EVALUATION SHEET STUDENT ____________

AREA: CHART STORY (Con't.)

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
V. Jump Jump red ball. Jump yellow balloon. Ball and balloon. A. Sight words in isolation jump red ball yellow balloon and B. Able to read complete chart story all at once.			
VI. Fish and Ball The fish is orange. The ball is red. Swim fish. Jump ball. A. Sight words in isolation the red orange swim jump is and fish ball B. Able to read complete chart story all at once.			
VII. Red Apple The apple is red. The apple is big. The apple is red and big. A. Sight words in isolation red apple is big and B. Able to read complete chart story all at once.			

EVALUATION SHEET

STUDENT ______________

AREA: CHART STORY (Con't.)

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
VIII. House See the little house. Red and black house. See, see, see. A. Sight words in isolation see the little house red and black B. Able to read complete chart story all at once.			
IX. Bird The big bird is yellow. The little bird is blue. See big. See little. A. Sight words in isolation the big bird is yellow little blue see B. Able to read complete chart story all at once.			

EVALUATION SHEET STUDENT ____________

AREA: SHAPES - circle, square, triangle

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
Touch with visual and verbal cues A. Two Shapes Set I circle, triangle (First circle placed on the left and then on the right) Set II circle, triangle Set III triangle, square Set IV square, circle B. Three Shapes circle square triangle			
Touch with verbal cue only A. Set I circle, triangle (First circle placed on the left and then on the right) Set II circle, triangle Set III triangle, square Set IV square, circle B. Three Shapes circle square triangle Label shapes circle square triangle			

EVALUATION SHEET STUDENT ________________

AREA: BIG/LITTLE
Similar three-dimensional objects are placed in front of the student and he is asked to touch big or little to the cue: "Touch ________."

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
Touch with verbal cue only A. Big can Little can			
B. Big cup Little cup			
C. Big plate Little plate			

EVALUATION SHEET

STUDENT ____________________

AREA: CONCEPTS

Phase I	Similar objects are placed in front of the student and he is asked to touch big or little, long or short, straight or curved.
Phase II	The objects are mixed and the student is asked to touch big or little, etc.
Phase III	The student is asked to label similar objects as being big or little, etc.
Phase IV	The student labels different objects as being big or little, etc.

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. Big/Little			
A. Phase I - Touches similar objects			
B. Phase II - Touches different objects			
C. Phase III - Labels similar objects			
D. Phase IV - Labels different objects			
II. Long/Short			
A. Phase I - Touches similar objects			
B. Phase II - Touches different objects			
C. Phase III - Labels similar objects			
D. Phase IV - Labels different objects			
III. Straight/Curved			
A. Phase I - Touches similar objects			
B. Phase II - Touches different objects			
C. Phase III - Labels similar objects			
D. Phase IV - Labels different objects			

EVALUATION SHEET STUDENT ____________

AREA: IN, ON, UNDER
A small box is placed in front of the student on a table. He is then asked to position a small block with respect to the box to the cue: "Put the block ______ the box." When this Phase is completed the teacher positions the block and the student labels where the block is.

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. Positioning the block			
A. Put the block on the box.			
B. Put the block under the box.			
C. Put the block in the box.			
II. Labeling position of block			
A. On			
B. Under			
C. In			

AREA: TOP, BOTTOM, SIDE
A small box is placed in front of the student on a table. He is then asked to touch or label the top. bottom, or side.

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. Touching with verbal cue only			
A. Top			
B. Bottom			
C. Side			
II. Labeling where the teacher is touching the box			
A. Top			
B. Bottom			
C. Side			

EVALUATION SHEET STUDENT ______________

AREA: SPATIAL POSITIONS
With a person or object in front of him the student positions himself with respect to the verbal cue: "stand in front of ______", "stand next to ______", or "stand behind ______".

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. With respect to a person A. in front of B. next to C. behind			
II. With respect to a chair A. in front of B. next to C. behind			
III. With respect to a bookcase A. in front of B. next to C. behind			
IV. With respect to a desk A. in front of B. next to C. behind			
V. With respect to an easel A. in front of B. next to C. behind			

EVALUATION SHEET STUDENT ________________

AREA: SPEECH
Imitation of sounds on command.

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. One Component A. ba B. ma C. pa			
II. Two Components A. ba-ba B. ma-ma C. pa-pa			
III. Three Components A. ba-ba-ba B. ma-ma-ma C. pa-pa-pa			

AREA: SPEECH YES-NO
The student is presented with four pictures and is asked a positive and negative question about each to which he responds "Yes" or "No".

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
Set I bus hat chair elephant			
Set II sink table dress car			

EVALUATION SHEET STUDENT ____________________

AREA: VOCABULARY DEVELOPMENT

Two sets of five words were chosen from the environment of two students that they did not know. While Set A was being taught to one student, Set B was taught to the other student at the same time. When they learned these, the sets were switched.

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
Set A apron glove rake orange butterfly			
Set B ruler pan lock iron potato			

EVALUATION SHEET

STUDENT ____________________

AREA: LANGUAGE ENRICHMENT

Phase I - Five pictures (that the student can label) are placed in front of the student. He is asked to touch the picture that answers certain questions (i.e., "What do you hang your coat on?").

Phase II - The student is shown one picture at a time and asked for example; "What do you do with a hanger?"

After each response in Phase I and II the teacher discusses the picture with the student.

TASK		TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
Set A	sink comb swing dress purse Phase I Phase II			
Set B	refrigerator table car clothespin mop Phase I Phase II			
Set C	hat flower horn eggs pumpkin Phase I Phase II			
Set D	bathtub chair bus hanger elephant Phase I Phase II			

EVALUATION SHEET   STUDENT ____________________

AREA: ALPHABET

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
A. Touching lower case letters with visual and verbal cues Set I a, b, c, d Set II e, f, g, h Set III i, j, k, l Set IV m, n, o, p Set V q, r, s, t Set VI u, v, w, x Set VII y, z			
B. Touching lower case letters with verbal cue only Set I a, b Set II c, d Set III a, b, c Set IV a, b, c, d Set V e, f, g, h Set VI i, j, k, l Set VII m, n, o, p Set VIII q, r, s, t Set IX u, v, w, x Set X y, z			
C. Labeling lower case letters Set I a, b, c, d Set II e, f, g, h Set III i, j, k, l Set IV m, n, o, p Set V q, r, s, t Set VI u, v, w, x Set VII y, z			
D. Labeling all the lower case letters at once			

EVALUATION SHEET STUDENT ____________

AREA: ALPHABET (Con't.)

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
E. Touching upper case letters with the visual cue of a lower case letter Set I a, b, c, d A, B, C, D Set II e, f, g, h E, F, G, H Set III i, j, k, l I, J, K, L Set IV m, n, o, p M, N, O, P Set V q, r, s, t Q, R, S, T Set VI u, v, w, x U, V, W, X Set VII y, z Y, Z			
F. Touching upper case letters with verbal cue only Set I A, B, C, D Set II E, F, G, H Set III I, J, K, L Set IV M, N, O, P Set V Q, R, S, T Set VI U, V, W, X Set VII Y, Z			
G. Labeling upper case letters Set I A, B, C, D Set II E, F, G, H Set III I, J, K, L Set IV M, N, O, P Set V Q, R, S, T Set VI U, V, W, X Set VII Y, Z			
H. Labeling upper case letters all at once			
I. Reciting the alphabet by memory			

EVALUATION SHEET STUDENT ________________

AREA: ONE AND MANY

Phase I
A. Similar objects are placed in front of the student and he is asked to touch one or many.
B. The objects are mixed and the student is asked to touch one or many.
C. Similar objects are placed in front of the student and he is asked to label whether they are one or many.
D. The objects are mixed and the student is asked to label whether they are one or many.

Phase II Eight blocks are placed in front of the student and the teacher cues the student: "Give me one block" and then "Give me many blocks."

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
Phase I A. Touches similar objects			
B. Touches mixed objects			
C. Labels similar objects			
D. Labels mixed objects			
Phase II A. One block			
B. Many blocks			

EVALUATION SHEET STUDENT ________________

AREA: NUMBERS

TASK		TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
Phase I	Touching with visual and verbal cues Set I 1 2 Set II 1 2 3 Set III 1 2 3 4 Set IV 1 2 3 4 5			
Phase II	Touching with verbal cue only Set I 1 2 Set II 1 2 3 Set III 1 2 3 4 Set IV 1 2 3 4 5			
Phase III	Labeling the numbers 1 through 5			
Phase IV	Counting to the cues: A. Count through 1. B. Count through 2. C. Count through 3. D. Count through 4. E. Count through 5. F. Count through 6. G. Count through 7. H. Count through 8. I. Count through 9. J. Count through 10.			
Phase V	Counting objects A. 1 object B. 2 objects C. 3 objects D. 4 objects E. 5 objects			
Phase VI	Counting objects and labeling how many there are A. 1 object B. 2 objects C. 3 objects D. 4 objects E. 5 objects			

EVALUATION SHEET

STUDENT __________________

AREA: PRINTING

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
I. Writing components in isolation | — / \\ O U ∩			
II. Putting components together to print first name			
III. Putting components together to print first and last name			

EVALUATION SHEET

STUDENT ____________________

AREA: FRUITS

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
Phase I Touch with verbal cue Set I apple orange Set II apple orange pear Set III apple orange pear banana Set IV pineapple grapes lemon peach			
Phase II Labeling Set I apple orange pear banana Set II pineapple grapes lemon peach			

AREA: VEGETABLES

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
Phase I Touch with verbal cue Set I onion tomatoe carrot potatoe			
Phase II Labeling Set I onion tomatoe carrot potatoe			

EVALUATION SHEET

STUDENT ______________

AREA: ANIMALS

TASK			TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
Phase I	Touch with verbal cue				
	Set I	horse duck			
	Set II	horse duck pig			
	Set III	horse duck pig sheep			
	Set IV	horse duck pig sheep goat			
	Set V	horse duck pig sheep goat cow			
Phase II	Labeling				
	Set I	horse duck pig sheep goat cow			

EVALUATION SHEET STUDENT ________________

AREA: LEFT AND RIGHT HAND
The student is asked to put his right or his left hand on the table. When these are taught individually, they will be alternated in one trial.

TASK	TRAINING IN PROGRESS	TASK. COMPLETED	TEACHING UNSUCCESSFUL
Set I Put right hand on table			
Set II Put left hand on table			
Set III Put left (or right) hand on table			

EVALUATION SHEET STUDENT ____________________

SOCIAL INTERACTION:

SELF HELP SKILLS:

EATING SKILLS:

EVALUATION SHEET STUDENT ____________________

SPEECH:

BEHAVIOR:

EVALUATION SHEET

STUDENT ____________________

COMMENTS:

OTHER ACTIVITIES EMPHASIZED IN THE CLASSROOM

- Putting on and taking off own outer garments
    - buttoning
    - zipping
    - tying
- Hanging up coats
- Time concepts
    - clock
    - calendar
    - weekdays
    - months
    - daily activities
- Science concepts
    - daily weather
    - care and feeding of fish
    - planting and taking care of plants
- Instruction on toilet procedures
- Guidance on eating skills
- Awareness of taking turns
- Music, gym, and art activities
- Telling and reading of stories
- Gross and fine motor development
- Animal sounds
- Tasting fruits
- Practice in cutting with scissors
- Left to right orientation
- Putting sequence pictures in order
- Auditory discrimination tasks (i.e. differentiate between the ringing of a bell and beating of a drum)
- Coloring within the lines
- Discriminating between boys and girls
- One-to-one correspondence activities
    - just right
    - not enough
    - too many
- Recognition of classmates and their printed names
- Paperwork
    - Drawing lines between similar objects

      ○ ———— ○
    - Marking objects "just the same" with an X

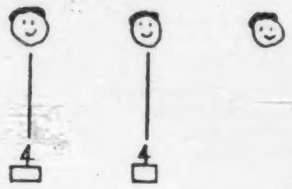
      ○ | ▭ ⊗ △
    - Marking the object that is big or little

      ☒ □ or ○ ⊗
    - Putting an X or a circle on the appropriate word named by the teacher

      bird [✓ red] orange
    - Drawing a line from the word to the picture of the word

      fish ——

    - One to one correspondence ○



EVALUATION SHEET

STUDENT ____________________

AREA: DIRECTIONS

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
Local Directions Raise hands Clap hands Shake head Stamp feet Stand up			
Distant Directions Go to the door Go to the wastebasket Go to the sink Go to the blackboard Go to the boxes			
Two-Component Directions Set I Clap hands then stand up Stamp feet then shake head Stand up then raise hands Shake head then clap hands Raise hands then stamp feet			
Set II Clap hands then raise hands Raise hands then shake head Stamp feet then clap hands Stand up then stamp feet Shake head then stand up			

EVALUATION SHEET

STUDENT ____________________

AREA: COLORS - red, yellow, blue, green

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
Touch with visual and verbal cues A. Two Colors Set I blue, yellow (blue presented on the left and then on the right) Set II blue, yellow Set III green, yellow Set IV red, green Set V yellow, red Set VI red, blue			
B. Three Colors Set I red green yellow Set II red blue green Set III red yellow blue Set IV green blue yellow			
C. Four Colors green blue yellow red			

EVALUATION SHEET

STUDENT ______________

AREA: COLORS (Con't.)

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
Touch with verbal cue only A. Two Colors Set I blue, yellow (blue presented on the left then on the right) Set II blue, yellow Set III green, yellow Set IV red, green Set V green, blue Set VI yellow, red Set VII red, blue			
B. Three Colors Set I red green yellow Set II red blue green Set III red yellow blue Set IV green blue yellow			
C. Four Colors green blue yellow red			

EVALUATION SHEET

STUDENT ____________________

AREA: COLORS - red, yellow, blue, green, brown, black, white, orange, purple, pink, grey

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
Set I - red, blue, green, yellow			
A. Touch with visual and verbal cues			
B. Touch with verbal cue only			
C. Label			
D. Read sight word with picture			
E. Read sight word alone			
Set II - black, orange, brown, white			
A. Touch with visual and verbal cues			
B. Touch with verbal cue only			
C. Label			
D. Read sight word with picture			
E. Read sight word alone			
Set III - purple, pink, grey			
A. Touch with visual and verbal cue			
B. Touch with verbal cue only			
C. Label			

EVALUATION SHEET

STUDENT ____________

AREA: COLORS AND COLOR SIGHT WORDS

The student is asked to match the sight words previously learned (red, green, blue, yellow, black, brown, white, and orange) with the respective colored pieces of paper to the cue: "Put the word next to the same color".

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
Set I red blue green yellow			
Set II black brown white orange			
Set III red blue green yellow black brown white orange			

EVALUATION SHEET

STUDENT ____________________

AREA: OBJECT DISCRIMINATION

The objects are placed in front of the student and the teacher says: "Touch ________."

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
A. doll, book, truck Set I doll book truck			
B. spoon, cup, napkin Set I spoon cup Set II cup napkin Set III spoon cup napkin			
C. crayon, pencil, paper Set I crayon pencil Set II pencil paper Set III crayon paper Set IV crayon pencil paper			
D. papertowel, soap, toothbrush Set I papertowel soap Set II soap toothbrush Set III papertowel toothbrush Set IV papertowel soap toothbrush			
E. box, scissors, chalk Set I box scissors Set II scissors chalk Set III box chalk Set IV box scissors chalk			
F. puzzle, beanbag, block Set I puzzle beanbag block			

EVALUATION SHEET STUDENT ____________

AREA: OBJECT LABELING
An object is held in front of the student and the teacher asks: "What is this?"

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
Set I doll book truck			
Set II spoon cup napkin			
Set III crayon pencil paper			
Set IV puzzle beanbag block			
Set V papertowel soap toothbrush			
Set VI box scissors chalk			

EVALUATION SHEET STUDENT ________________

AREA: NOUN SIGHT WORDS

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
Set I ball fish balloon			
A. Identification of pictures (Labeling)			
B. Read sight words with picture cues			
C. Read sight words alone			
Set II apple house bird			
A. Identification of pictures (Labeling)			
B. Read sight words with picture cues			
C. Read sight words alone			

AREA: ADJECTIVE SIGHT WORDS

TASK	TRAINING IN PROGRESS	TASK COMPLETED	TEACHING UNSUCCESSFUL
Set I big little			
A. Identification of pictures (Labeling)			
B. Read sight words with picture cues			
C. Read sight words alone			

References

Becker, W. C., Engelmann, S. & Thomas, D. R. *Teaching: A Course in Applied Psychology*, Science Research Associates, Palo Alto, 1971.

Bricker, W. A., & Bricker, D. D. A program of language training for the severely language handicapped child. *Exceptional Children*, 1970, *37*(2), 101-111.

Brown, L., Bellamy, T., Tang, P., & Klemme, H. A procedure for teaching trainable students to follow verbal directions, 1971.

Brown, L., Jones, S., Troccolo, E., Heiser, C., Bellamy, T., & Sontag, E. Teaching functional reading to young trainable students: Toward longitudinal objectives. *Journal of Special Education*, 1973, *6*(3), 237-246.

Brown, L., & Perlmutter, L. Teaching functional reading to trainable level retarded students. *Education and Training of the Mentally Retarded*, 1971, *6*, 74-84.

Chalfant, J., Kirk, G., & Jensen, K. Systematic language instruction: An approach for teaching receptive language to young trainable children. *The Winnower*, 1969, *5*(1), University of Wisconsin SEIMC, Madison, Wisconsin.

Ginsburg, H., & Opper, S. *Piaget's theory of intellectual development*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1969.

Guess, D., Rutherford, G., Smith, J. O., & Ensminger, E. Utilization of non-professional personnel in teaching language skills to mentally retarded children: An interim report. *Mental Retardation*, 1970, *8*(2), 17-23.

Huppler, B. Teaching sight words to trainable children via chart stories. Toward the development and implementation of an empirically based public school program for trainable mentally retarded and severely emotionally disturbed students, 1972, 98-103.

Mann, R. A., & Baer, D. M. The effects of receptive language training on articulation. *Journal of Applied Behavior Analysis*, 1971, *4*, 291-298.

Molloy, J. S. *Trainable children: Curriculum and procedures*. (Rev. ed.) New York: John Day Co., 1972.

Pimsleur, P. Discrimination training in the teaching of French pronunciation. *Modern Language Journal*, 1963, *47*, 199-203.

Rayek, E., Nesselroad, E. Application of behavior principles to the teaching of writing, spelling and composition. In G. Semb (Ed.), *Behavior analysis and education*. Univ. of Kansas Support and Development Center for Follow Through, Department of Human Following, 1972.

Sheperd, B. W., Wyrick, R. R., & Bilyeu, B. *Curriculum guide for teachers of trainable mentally retarded children*. Jefferson City, Missouri: State Schools for Retarded Children, Missouri State Dept. of Education.

Staats, A. W. Learning, language and cognition. New York: Holt, Rinehart and Winston, Inc., 1968.

Whaley, D. L., & Malott, R. W. Elementary principles of behavior. (3rd ed.) Kalamazoo, Michigan: Behaviordelia, P.O. Box 1044, 49001, 1969.

Winitz, H., & Preisler, L. Discrimination pretraining and sound learning. Perceptual Motor Skills, 1965, 20, 905-916.

York, R., Brown, L., Yoder, D., & Scheerenberger, R. C. Development of prelanguage and language skills in severely and profoundly retarded institutionalized children. Paper presented at the annual meeting of the American Association on Mental Deficiency, Minneapolis, May, 1972.